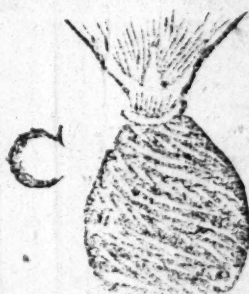
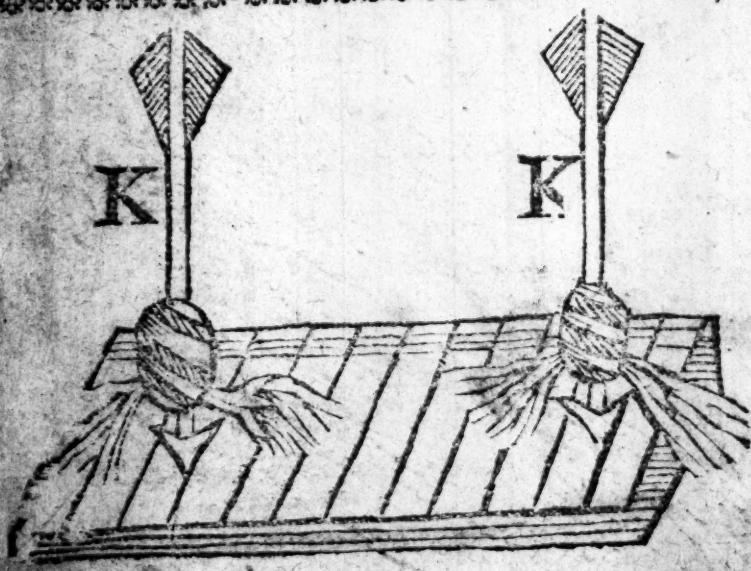




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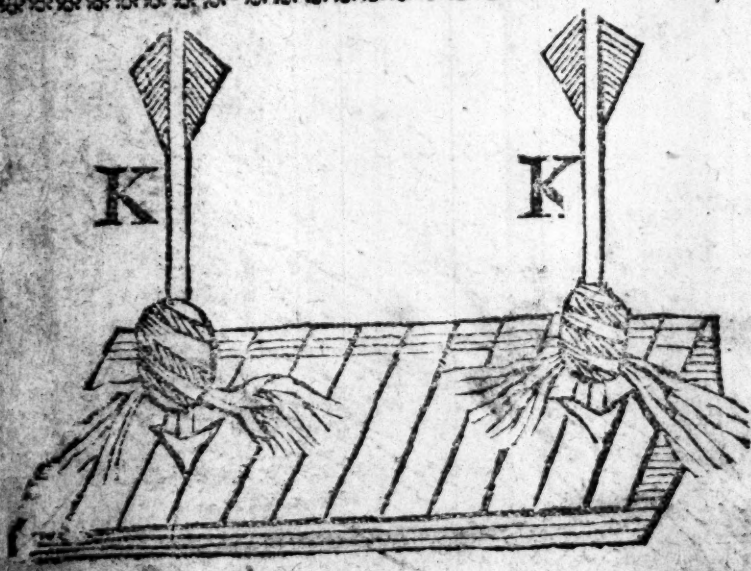




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# Hocus Pocus:

OR, A

## RICH CABINET OF

### Legerdemain Curiosities, Natural and Artificial Conclusions.

SHEWING

1. How to cleave Money.
2. To make Sport with Cats, Ducks, or Poultry.
3. To hang two Knives on the Brim of a Glass.
4. To wash your Hands in melted Lead without damage.
5. To make a Sixpence seem to fall thro' a Table.
6. To teach Children to Read by Dice.
7. Divers wonderful Things done by the Loadstone.
8. To catch *Kittens, Gophers, Moppies, &c.* alive.
9. To catch a Pick-pocket.
10. To name a Pack of Cards, and not see them.
11. To write *Love Letters* secretly.
12. Experiments in *Drawing, Painting, Geometry, Astronomy, &c.*
13. To make variety of *Fireworks*.
14. To keep *Fowl Venison, or any Flesh*, sweet a Month.
15. To make a Drink when you cannot relish other Liquors.
16. To *fox Fish and Fowl*.
17. To make one Candle out of three.
18. To preserve Fruit all the Year.
19. To make excellent *Plastering for Ceilings or Walls*.

With many other Natural and Artificial Conclusions, affording great Variety of Innocent Sport and Pastime.

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*Adorn'd with above 40 curious Cuts.*

---

By J. WHITE, a Lover of Art and Ingenuity

---

Sold at the Ring in Little Britain, pr. 1s. 2s. also Hill's Legerdemain, and Arts Treasury. Price each 1s. A thousand notable Things; the way to save Wealth, and the way to get Wealth, 1s. 6d. each: Sports and Pastime, 6d.

To all Lovers of

## Artificial Conclusions.

**I** Have here opened to your  
View a Rich Cabinet of  
Curiosities, both profitable and  
diverting, of which I think I  
may say, the like was never  
extant in the English Tongue.  
For which reason these few Re-  
ceipts (several whereof are my  
own) I dedicate freely to thy  
use, not doubting but there are  
things contained in this small  
Volume that will give Satisfac-  
tion to the Ingenious.

JOHN WHITE.





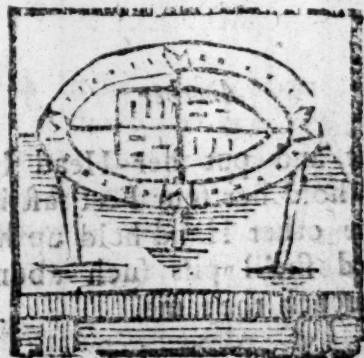
# WHITE'S Rich Cabinet

## OF INVENTIONS.



*To cleave a Groat, or other Piece of Silver, making  
it like two.*

**T**AKE three small Pins, stick them down  
upon a Board or Table triangular wise,  
then take a thin whole Groat, and lay it level on  
the Heads of the Pins, as you see in this Figure;



then take a piece of Brimstone, bruise it to powder, and cover the Groat (or other piece) therewith all over in a pretty thicknes, then with a lighted Candle, or a piece of Paper, set the Brimstone on fire till it be consumed: when this is done, and the Fire out, the edges will open a little, like an Oyster; then take a Knife and put into it, and it will part, retaining the Impression on both sides pretty perfect.

*How to make Sport with a Cat.*

Get a little Bell, such as the tame Hawks have at their Legs, and tie the Bell something hard at the end of the Cat's Tail and let her go, she feeling of her Tail smart, and hearing the Bell gingle, will run up and down as if she were mad, flying against the Walls and Windows; then if she can, she will get into some hole to hide herself, but when she wags her Tail never so little, then out she comes, and is as mad as before, and never will rest till it be off.

*Another.*

Some have shod a Cat round, with putting melted Pitch into four Walnut-shells, and placing her Feet therein, and she will make pretty Sport.

*Another.*

Get a Cat and put her Head betwixt your Thighs, and hold her four Feet fast in one Hand, and with the other Hand hold up her Tail near the Fire, and she'll piss such abundance, that she'll quite quench the same.

*How*



*How to make pretty Sport with Ducks or Poultry.*

Get about a yard of strong Thread, and a little Rag of red Cloth, tie it to the end of the Thread, and at the other end tie a piece of Cheefe (somewhat lesser than a Bean) with part of the rind on, and throw it amongst the parings to Fowl, Geese, or Ducks, with a Worm or Flesh baited on a good strong Hook, and strong Line; stand by a River-side where wild one's haunt, presently one of them will swallow it down; now the rest of the Thread and the Rag dragging behind her, she will waddle up and down, and perceiving the red Rag to follow her, will make her afraid, that she will run from place to place, not knowing what to do, at length she will wing and fly to a Pond of Water, and there quack, but presently spying the Rag to swim after her, down she will dive, then up again, then down, then up, at length out of the Pond again; and will not be quiet till she gets it out of her Belly. The like Sport you may have with other Poultry, by tying a long-white Goose quill, (or a light Stick with a Rag on the top) upright at her Tail.

*To make two Knives hang upon the brim of a Glass.*

Take a little Stick, about four inches long, and make it sharp at one end like a Butcher's Scuer, and then get two Knives, somewhat of an equal poise, and prick the points of them towards the bigger end of the Stick on each side slopcwise, as you may see here in the Figure; then put the small end of the Stick upon the rim of a Glass of Wine

or

or Beer, and you may take up the Glass and drink and they will not fall off.



*To wash your Hands in melted Lead without Danger.*

Take an ounce of Quicksilver, two ounces of good Bole Armoniack, half an ounce of Camphire, and two ounces of Aqua vitæ; then mingle them together, and put them into a Brazen Mortar, and beat them with a Pestle; having thus done, anoint your Hands all over thoroughly well with this Ointment, and then you may put your Finger into melted Lead, or you may wash your Hands therewith, if one pour Lead on them; and it will neither scald nor burn.

*A ready way to teach Children their A B C in manner of Play.*

Cause four pieces of Bone or Wood to be cut into six square like Dice, and upon every side or square let one of the Letters of the Alphabet be engraven or writ, as A. B. C. D. E. F. upon one of them, then G. H. I. K. L. M. on the other,

## Variety of Inventions..

19

other, and so of the rest in order, as you may see here in the Figure.



Now the Child taking delight, and using to play with them (amongst other Children) and be-told what Letters are uppermost, will soon learn their Alphabet, as it were by the way of Sport and Pastime.

*An excellent way to teach one to read Speedily  
and truly.*

Take any Book of small value, and at every Syllable's end underneath, or at the top, with a small Pen of Ink, make a little speck or mark; but if the speck or mark were made with red Ink it were the better; or if it be in a Book that you would not deface, then take a small Pin or Needle, and prick little Holes at each Syllable, which will hardly be perceived. This Experiment is best to be made with hard Words of many Sylla-bles, as in the Example following:

*Abraham, Achitophel, Bartholomew, Mathematician.*

These to the ingenious will suffice, for I have known those that by this method soon learn to spell well.

*Divers Things performed by the Loadstone.*

Many and Wonderful Mathematical Conclusion

ar

are performed by the *Magnet*, or *Loadstone*, only I will give a touch at some few for Recreation.

These stones are to be had at the *Ironmongers*, but they ought to be polished and made fit by a cunning Artist. This Stone hath his two Poles, one *North*, the other *South*, answerable to the Poles of the World; for if you take a piece of Wire of 4 or 5 Inches long, and touch one end thereof with a *Loadstone*, and then thrust it through a piece of Cork, putting it to swim in a Basen of Water, presently you shall see one end of the Wire will turn full *North*, and the other full *South*.

This Receipt is profitable for some Travellers, who having a sewing Needle about them that is touched with this Stone, may prick it into some little light piece of Wood or Cork, and place it in the Water, and it will set out the *North* and *South* instead of a Compass.

If for Recreation you take two Wires, and put each Wire into a Cork, touch one Wire's end with the *North* end of the Stone, and the other Wire's with the *South* end of the Stone, and then put them both into a Basen of Water a pretty way asunder, yet they will begin to move and stir, and draw nearer together, and on the sudden join and meet: Now if upon those Wires or Corks there were placed little paper Tilters on Horseback, they would run their Course at one another in the Water very prettily.

Also, if this Stone or *Magnet* be enclosed in a Box of Wood, Stone, Silver or Brass, yet it will extend its Operation and Working by many pretty and ingenious Practices admirable to behold.

As for Example, if you will make the Forms and Portraitures of divers Things in thin Pastebord, as Horsemen, Footmen, Ships, Boats, Beasts, Birds,



Birds, Flies, Worms, Serpents, or the like, you may closely convey into them a short Piece of Wire; and set them upon a Board, Trencher, or Path board, and if you will have them move or walk, then hold the *Load-stone* close in your Hand under the Board, and that way which you move your Hand underneath, that way the Images will move and creep on the top.

Also, if you place the *Load-stone* privately to, or near the Ceiling, or over a Door, and then hold a piece of Iron near to it (tying a Thread to the Iron) that it touch not the Stone, which will attract it; and then the Iron will seem to hang in the Air: If you touch an Iron Ring with this Stone, it will take up a dozen, or more Rings together, hanging one to the other like a Chain. Also if a Knife's point be touched therewith, it will take up Needles or Wire, and by it you may know the Counterfeit, or *Newgate Halipenny*, as some call them.

Many other rare Conclusions may be performed by this Stone, which I forbear to write of. Fire, Garlick, or Onions spoileth the Virtue of this Stone; therefore let it not touch or come near them.

*To catch Kites, Crows, Magpies, &c. alive.*

Get *Nux vomica*, beat it to powder; this done, take raw Flesh or Liver, and cut it into little pieces, that the Fowl may swallow them whole; then cut Holes in the same, and put your powder therein, and then lay these pieces where they haunt, but as soon as they have swallowed down the same, they will fly to the next Tree they can come at, and this presently makes them so drunk or sick, that they will fall down to the Ground; but be sure to watch them, and run presently

to the Tree, for they will soon recover and fly away.

I believe if it were sodden with other Grain, it would have the like operation with other Fowl.

*To catch Pigeons, and other Fowl.*

Take pieces of brown Paper, and roll them round, making Coffins of them, such as the Grocers make to put their Fruit in; let them not be above a Finger long, paste the sides and ends of them with some starch, clip the upper part of them round with a pair of Shears, then anoint the inside of the uppermost skirts of them round about with Birdlime, or some stuff that will but cling to the Feathers; but you must (a day or two before you use it) lay or strew some Pease or other Grain to make them haunt the Place, and they will be less fearful; then if you please, make a hole in the Ground a little way, and put your Coffins upright or sloping, putting a few Peas or Corn in them, strewing here and there Peas near them, and when she picketh into the Coffin, she is immediately hooked, and blindfolded, not seeing which way to fly: And thus you may take them easily.

*A sure way to catch a Pickpocket.*

A Gentleman being in a throng in a Fair, had his Purse picked out of his Pocket, he missing it, presently buyeth two pennyworth of Fish-hooks, and causeth a Taylor to sew them round about toward the upper part of his Pockets, with the points of them downwards, and so the next day away he goes to the Fair again among the throng, seeming careless of his Pockets, presently there was a Diver nibbling at the Bait, and nimbly had his Hand in his Pocket; the Gentleman being  
wary

## *Variety of Inventions.*

13

wary (perceived that the Fish had swallowed the Hook) gives a jerk aside, which caused the Hooks to catch good hold in his Hand, and then he had him sure; then said the Gentleman, *Fellow, what maketh thy Hand in my Pocket?* O, good Sir, (replied the *Pickpocket*) *pardon me, I cannot pull it out.* The Gentleman told him of the Loss he had sustained the day before, and making of him to restore back his Money, he cut out his *Pocket* and let him go, with store of picking work to get the Hooks out of his Hands again.

*To make Fowls, and all small Birds drunk.*

What Meat they eat, as Wheat, Barley, or Grain, lay the same to steep in the Lees of Wine, or in Aqua-vitæ, or in the Juice of *Hemlock*, and strew the same Grain in the places where Birds do haunt.

*Another.*

Take *Tormentil* and boil it with strong Wine, Wheat, Barley or other Grain, then strew it where they haunt, and the Birds will eat the pieces among the Grain, which makes them so drunk they cannot fly away.

*Another.*

Make Paste with Barley-Meal, Onion-blades, and Henbane seeds, and throw it where the Birds do haunt.

*To make Sport with a Cock.*

Hold a Looking-glass before him, and he'll fight as eagerly with his Shadow as if it were alive Cock.

B

An

*An excellent Bait to catch Fish with an Angle.*

Make Paste with fine Wheat flower, tempered with a little Saffron and Sugar, and bait your Hook therewith, and they will bite apace: This is a good Bait for Roach, Dace, and such like.

*Another.*

Take the Crum of a new penny white Loaf, an ounce of *Coculus India*, and an ounce of Henbane-seed finely powdered, temper the same well with good *Aqua-vitæ* into a Paste, and divide them into small pieces bigger than grains of Wheat, and then cast handfuls in at once into the Water where is store of Fish, and you shall presently see them drunk.

*To make one watching Candle outlast three.*

Take a Pail or Bucket, and fill it full of Water, and set it in the place where you intend that your Light shall stand; then take your Candle and warm it at the lower end, and there stick a brass Farthing Token, or such like; and when you will light your Candle, put it gently down into the middle of the Water, (but be sure that the bottom of the Candle do not touch the bottom of the Pail) and then it will swim upright to the very edge near the light: The Reason that the Candle will last so long, is caused by the coldness of the Water; and this is a safe way that no Rat can run away with the Candle lighted, as I have heard that they have done, and endangered the House with Fire.



*To write any Name upon a Paper, and then burn it to Ashes, yet afterward it may be read plainly.*

Take a new clean Pen that was never writ with, and dip in your own Water as you do in Ink, then strip up your Shirt sleeve above your Wrist, and upon your Arm write your Name, or any Mark, and then let it dry on your Skin, and nothing will be seen, then put down your Sleeve and button your Wrist; do this privately, and it will cause some wonder; then take a piece of white paper and write your Name, or the Mark thereon with another Pen of black Ink, (but let it be written as like the other as you can) then take the Paper and burn it, and lay the Ashes on a Table, and stripping up your Sleeve, rub the Ashes hard with your Finger, where you had written with your Water, then blow of the Ashes, and the Name or Mark will plainly be read on your Arm in black Letters.

*To view the back part of your Head by Glasses.*

If you would behold the back part, or shadow of your Head for a Wound, or the like, take a Looking-glass and hold it behind your Head, and then take another Looking-glass and hold it before you, and from the Glass behind, you may see your Shadow in the Glass before you.

*To name all the Cards in the Pack, and never see them.*

Privately drop a drop of Water or Drink (about the bigness of twopence) on a Table before where you sit, and let any body shuffle the Pack

of Cards, and then taking them into your hand, place a Candle on the Table before you (for this Trick is best to be done by Candle-light) and holding down your Head (as you may see in the Figure) lift the Cards above the brim of your



Hat close to your Head, that the light of the Candle may shine on the Cards, then in the drop of Water (like a Looking-glass) you shall see every speck of each Card before you draw them, which you may name, or putting your Finger upon the Spots, you may say that you feel them out; then lay down your first Card, and name the next, as your first Card was the Duce of Clubs, the next is the five of Spades, and so of the rest.

*To keep Fowl, Venison, or Flesh sweet a Month.*

Make a strong Brine with bay Salt and white mingled

mingled together, so as the Water be over-glutted with Salt, and being scalding hot, parboil therein the Fowl or Flesh which you intend to keep for some reasonable time, (that is to say, according to the greatness and greasiness thereof) then hang it up in a convenient cool place, and it will last a sufficient time, without any bad or over saltish taste. This is a good way for Seamen and others in hot Countries, who are enforced sometimes to victual themselves in such intemperate Climates where no Flesh will last sweet four-and-twenty Hours together, by reason that they have no means to make the same to take Salt, which without question will enter this way, and make penetration very speedily, by reason of the hot and fiery spirit of Salt thus prepared.

*A Drink when you cannot relish Beer or Ale.*

Take a quart of good Water, put therein five or six spoonfuls of good *Aqua Vitæ*, or Brandy, and an ounce of Sugar, with a branch of Rosemary, then brew them a pretty while out of one Pot into another, and then is your Drink prepared.

*Another.*

Some mingle Vinegar with good Water, and it serveth very well to quench the Thirst; or Sugar and Water, or Treacle and Water is an excellent Drink better than Beer.

Some carry a piece of Allom in their Pocket if they are to travel, and know not how to get Drink or Water, and when they are a dry, they put a piece of that in their Mouth, and it will fetch up moisture which will assuage Thirst. Or take a spoonful of oatmeal, and brew or mix it well together with water.

*To harden Leather that it shall last a long time.*

This is a good and profitable Receipt for many poor labouring Men, and is thus performed. Take and lay such Leather as is well tanned to soak in Water, wherein there hath been some store of filings of Iron a long time, or else in the Water that hath long lain under a Grinding stone, into which such Iron as hath been from time to time ground away hath there settled.

This is good also to harden Leather for the Caulkers or Pumps of Ships, or others, to make them last long.

*To make a Walking-staff have knots where you please.*

Get a strait piece of Wood (of your desired length) of Holly, Ash, Service tree, Walnut-tree, or Pear-tree, let it be free from Knots or Shakes, then plain it into six or eight sides, a good deal bigger than your Staff shall be; this being done, get a short punch of Iron, and let the small end be filed about the bigness that you intend your Knobs shall be, filed about a Bench or Table, and where you will make the Knobs, with a Hammer punch Holes therein, and so do on every side; then plain it over again till you have made your Staff smooth, that there be no dent seen thereon; when you have thus done, put it into some Cauldron of boiling Water for a good space, and when you take it out again, you shall see that it will be full of Knobs, for with the heat of the Water it forceth the Bruises (which were made with the Punch) to swell out of the Wood again.

You may file your Punch like a Star, or other Work,



Work, and it will shew very pretty : I once saw a Partizan, or Captain's Leading-staff, which was done in this manner, and being put into a Dyer's Cauldron when he dyeth blacks ; when it was dryed, and rubbed well with Linseed Oil it shewed like Ebony.

*To know when the Moon is at Full by a Glasse of Water.*

Take an ordinary drinking Glasse, and fill it full of Water up to the brim, so that it doth not run over, let this be done a little before that the Moon be at full, and then at the very instant that the Moon is at the full, the Water will presently boil over.

*To know the Moon's Age at her Increase.*

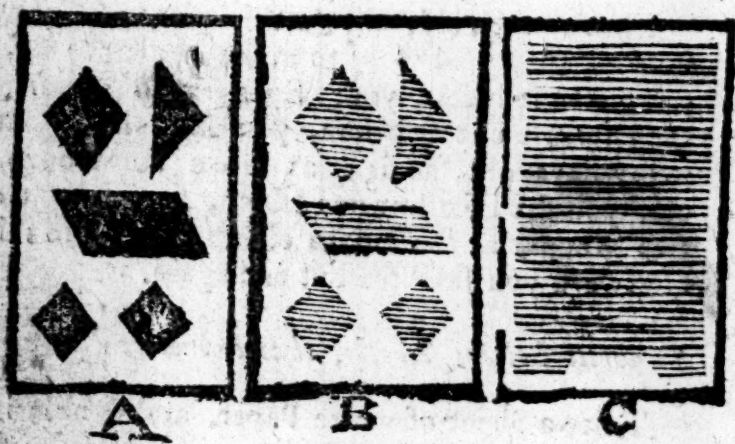
I have been told, that a thin piece of Cyprus, such as they had wont to make Hatbands off, if you hold it before your Eyes in an evening at the encrease of the Moon, you shall know how many days old she is ; as when she is one day old, you shall see but one Moon, at two days old two Moons, at three days old three Moons ; but afterward you shall see but one again.

*To write Letters secretly, that cannot be discovered.*

Take a Sheet of white Paper, and double it in the middle, then cut holes through both the half Sheets, let the holes be cut like the panes of glass Windows, or other forms what you best fancy, and then with a Pin prick two little Holes at each end, and cut your Paper in two Halles, give one half to your Friend (to whom you intend

tend to write) the other half keep to yourself : Now when you do write, lay your cut Paper on a half Sheet of writing Paper, and stick two Pins through the two holes that it stir not ; then thro' those holes that you did cut, write your mind to your Friend ; when you have done, take off your Paper with the holes again, and then write some other idle Words both before and after your Lines ; but if they were written to make some little sense, it would carry the less Suspicion ; then seal it up and send it.

When your Friend hath received it, he must lay his Paper on the same, putting Pins into the Pin-holes, and then he can read nothing but your Mind which you writ, for all the rest of the Lines are covered. Observe the Figure and it is easily apprehended.



Where the Letter A is placed, that doth signify the half Sheet of cut Paper with holes ; where the Letter B is placed, doth signify the substance of the Letter which you write, and where the Letter C is, doth signify the Letter

ter filled up with Lines to join to the other Words. Now when your Friend writes to you, he must do the like.

*Another.*

Write a Letter (what you please) on one side of Paper with common Ink, then turn your Paper, and write on the other side with Milk, (that which you would have secret) and let it dry; but this must be written with a clean Pen:) Now when you would read it, hold that side which is written with Ink to the Fire, and the milky Letters will then shew blueish on the other side, which may be perfectly discerned.

*To fetch Oyl or Grease out of Books, Writings, or Clothes.*

Buy a pennyworth or two of Oil of Turpentine, and put a drop or two upon the place which is oily or greasy, rubbing it on, and you shall see how it will drink up the Oil or Grease and be presently dry and fair, for this Oil of Turpentine is a great dryer, and is good to put amongst Oil Colours to make them dry speedily.

*To refresh and scower old Pictures in Oil, making them to look almost as fresh as new.*

Take the Picture out of the Frame, then wipe or brush off the Dust very clean, and then lay it level upon a Board or Table, pouring good sharp Vinegar all over the same, and there let it lie and soak for three or four hours; if the Vinegar be dry'd up, then pour on more continually keeping it wet; then beat a piece of dry Brick very fine to powder, and see there be no Lumps

or

or Stones therein, for they will raze and scratch the Picture, and then put the powder into a coarse linen Rag, and tie it, and then dip it well in a Porringer of Vinegar, and with your Rag and Powder, rub and scower your Picture all over very hard, and then with fair Water or a wet Clout wash the filth away; but if you see any spots or filth remain, then scower it again and wash it; then dry it very well with a Cloth, and when you have dry'd it, put it again into the Frame, and set it in the Sun for a day or two, (for the Sun refresheth the Colours very much) and then rub it hard with a dry woollen Cloath till you make it shine, and then hang it up. This will cause it to look almost as fresh as when it was new.

Some use to wash them in Soap, and then oil or varnish them over, but that is not good, because that the Oil or Varnish will turn yellow and gather Dust.

*To keep Sword-blades, Pistols, Edge-tools, or other Things from rusting for seven years in a dry House.*

Take Fish Glue, or Isinglass, and cut it to pieces, then with a Hammer beat or bruise it upon an Anvil or Stone, and then put it into a little Skillet, or such like, with Water, and let it dissolve over a gentle Fire, still stirring it as you do your common Glue; then when it is well boiled take it off, and with a pencil, or small hair brush lay the same, while it is hot, all over your Sword-blade as thin as may be, and then lay it to dry, and it is done. This thin Coat keepeth the Moistness of the Air from the Metal, that it cannot rust; but when you are to wear it or use it, take a blunt Knife, and you may easily scale off the  
thin



thin substance, and then it will be as bright as any Silver.

I verily believe, that our common Glue will do the like, keeping of it in a dry Room.

*A Cement for broken Glasses, China Cups, and such like.*

Take one part of Virgin Wax, and two parts of the Tears, or clear drops of Mastich, melt them together, and cement therewith. But the better is, if you beat the whitish Fish Glue or Isinglass with a Hammer till it begin to clear, and then cut the same into very small and short pieces, and dissolve and melt the same over a gentle Fire with *Aqua-vitæ*; then let one that standeth by, hold both the Pieces that are to be cemented over a Chafing dish of Coals till they be warm; and during their heat, lay on the dissolved Glue with a fine Pencil, then bind the Glass with Wire or Packthread to keep it steady, and so let it remain till it be cold and dry. White Lead and Oil mixed, such as Painters use, will also do it.

*Another.*

Take a little Quantity of unslacked Lime, Wheat-flour and the white of an Egg, and incorporate them together. Mastich, *Aqua-vitæ*, and White Lead is good; so is Isinglass, being dissolved and melted with Rhenish-Wine.

*To catch Fish in a dark Night, with a Candle under Water.*

Get a Urinal, and put pretty soft Clay therein, and with something that is flat at the end, press the

the Clay gently to the bottom of the Glass, smoothing it as well as you can, then take a Stick and shape it about the bigness of a Candle's end, wet the Stick, and put it into the neck of the Glass, making a hole in the middle of the Clay, as you make Clay Candlesticks, then make a little Hoop of a Willow-stick, and tie pieces of Cork in four places of the Hoop equally distant, and get a thin, light, round piece of Board, and with four little Sticks of an equal length, tie one end of them to the Corks, and the other ends fasten to the Board to support it, as you may see here in this Figure.



In the Board you must make a hole in the middle to put the Neck of the *Glass* thro', and there tie it, and make a loop with a string to the Board that you may with a long Pole put it into

into the water ; when you will use it, put your Candle into the Glass in the clay Socket, a little below the brim, that the Wind blow not the light out ; if you please you may with Wax or Glue put little pieces of Looking-glass, or other Glass under the Board on the side next the Water, and this Light will shine a great compass in the Water, and the Fish will straight resort to the same, where you may very easily take them with a Net.

This might be done with the Glass alone, by tying Corks about the neck of the Glass, to keep the mouth above Water.

*To grave Arms, Posies, or other devices upon Eggs.*

Melt Suet pretty warm, and dip in your Eggs in this manner ; hold the Egg between your Thumb and Forefinger, and quickly dip one half therein, and hold it in your hand till it be cold, and then dip in the other end that it be thinly covered all over, then take a little Bodkin or Needle, and grave in the Suet what Letters or Words you please, then lay the Egg thus engraven in good Wine-Vinegar, or other Vinegar, in some Stone pot or Vessel for the space of six or eight hours more or less, according to the strength or sharpness of the same ; then take out the Eggs, and in hot Water dissolve the Suet from the Shells, then lay the Egg to cool, and the work will appear to be graven in the Shell of Russet colour. And if the Egg lie long enough in the Vinegar after it is so graven, the Letters or Works will appear upon the Egg itself, being boiled, and so you may serve them up at the Table : And if you care not to lose the Meat, you may pick out the same, when the Shell is through

through graven, and you shall have a strange piece of Work performed on the same.

*To make Wax, either red, or green, or soft Wax.*

Take to one pound of Wax in Summer, three ounces of the clearest Turpentine; but if you make it in Winter, take four ounces of Turpentine, melt these together over a soft Fire, stirring them with a Stick, and when they are well melted together, take it off, and let it cool a little, and then mix with the same the red Root of *Anchusa*, or Vermillion ground an ounce, and an ounce of sweet Oyl; stir these well together again over the Fire, then take it off to cool, and pour it into cold Water, and then upon a wet Board, and your Hands wet, you may roll it into what form you please. Instead of Vermillion, you may take three times as much red Lead, but that is not so good.

If you will make green Wax, instead of Vermillion, take the like quantity of Verdigris. For black, put Lamp black, or black Earth.

*To make a glorious Light with a Candle.*

This is fit for those that perform curious and fine Works by Candle light, as Jewellers, Engravers, or the weak-sighted to read by, never dazzling the Eye.

Go to the Glass house, or Glass shop, and let them blow you a thin round Globe glass, bigger than a penny Loaf, (the bigger the better) with a short neck like a Bottle, they know how to make them. When you have this Glass, with Glue or Wax bind a piece of Tape or Packthread about the neck or top, making a little Loop therewith  
to



to hang by; then fill your Glass with the purest Conduit or Spring-water you can get (putting some *Aqua-vitæ* or Brandy therein to keep it from freezing) stopping it close to keep the Dust out; having thus done, if you will use it at a Table or Bench, knock a Tenterhook or Nail into the Cieling or Shelf, and with a Tape or Packthread fasten it to the Loop, and hang it up; but a round Stick were better to hang it on, putting it into a post or hole in the Wall, that you may let it higher or lower at your pleasure in turning the Stick; then behind your Glass set a Candle lighted upon the Table, and you shall have a glorious Light thro' the Glass and Water for your purpose; behold the Figure. Some use to place a Sheet of oily Paper betwixt them and the Candle, and this will cause a good Light.

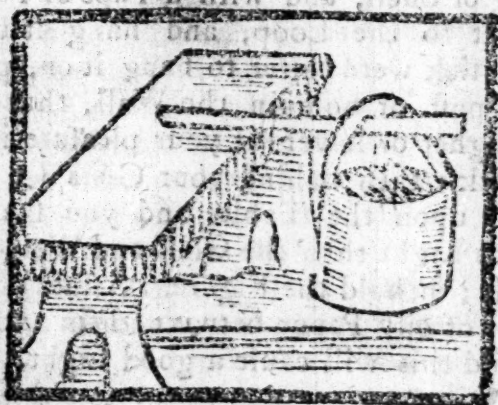


*To lay one end of a Stick upon a Stool or Table, and hang a pail of Water at the other end,*

Lay one end of a Staff or Stick a pretty way upon a Table or Stool (so that it roll not off) letting the other end hang over the Table likewise,

*A Rich Cabinet, with*

(as you may see in this Figure) then take a Pail full of Water, and hang the Pail or handle upon the same; but you must have another short stick that will reach just from the inside of the bottom



of the pail to the long stick on the Table, placing the short Stick just under the Pail very stiff, and then shall the pail of Water hang from the Ground upon the long staff's end on the Table without falling, seeming very strange; this is difficult at first, till you hit just in the centre of Gravity, yet I have often done it.

*To make a bunch of Grapes of green Wax seem Natural.*

Get a little Stick turned round at the end about the bigness of an Arrow, and then have your Vessel of green Wax melted, dipping your Stick in the same about the third part of an inch deep, and it will be almost in the fashion of an Acorn-cup; make a good many of them: Then take an Egg, and make a little hole in the big-

*Variety of Inventions.* 29

bigger-end of the Shell, less than a Penny, and get out the Yolk thereof, and dry the Shell; then with a piece of your green Wax hold it to the Fire, rub or dawb the Shell therewith thinly all over; then hold the Shell in your Left-hand, and with your other hand take up first one Cup, holding the same a little near a Candle to warm, and quickly stick it on your Egg, and so do with all the rest of the Cups, till you have filled it all over; they must be set something close together. Now when you have thus done, take a little Stick about the bigness of the rag of a Point, and tie a Packthread in the middle thereof, and then put the Stick into the hole of the Shell, and so hang it up; you may cut Leaves like Vine leaves in green Paper, and fasten them to the String or Stalk above the Bunch: I have made some Womens Mouths to water at this Conceit, they seem so natural to the Eye; and these Grapes will last all the Year.

*To know the Hour of the Day or Night by a Ring and Glass.*

Take a small Thread, and put it thro' a gold Ring, or otherlike Ring, and doubling the Thread, tie a pretty big knot at the end, and cut it off, and let the doubled Thread be seven or eight inches long, then take a Bowl-glass, and set it on a Table, and hold the knot of the Thread something hard betwixt the ends of your Forefinger and your Thumb, as you see in the Figure following, which will cause the Pulses of your Wrist to beat; let the Ring hang in the middle of the Glass a little within the

rim, then the working of your Pulse will make the Ring to move, striking up n the sides of the Glas the Hour of the Day or Night, and then the Ring will stand still again.



*To grave and enlay Colours into Gold, Silver, Iron, or Copper, so as to shew like Enamel.*

First cover your Metal with a crust of warm Wax, and when it is cold, with a fine sharp Bodkin, draw or cut out the shape or proportion of what you please, either Letters, Flowers, Borders, or Escutcheons of reasonable largeness; then pour upon the same empty places (which you have engraven upon the Wax) some few drops of strong Water or *Aqua fortis*, and let them lie a while, and when you find them deep enough graven, mingle Orpiment and Mastich melted together  
for



## Variety of Inventions.

31

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for a yellow Colour, and Vermilion and Mastich  
For red, and Bice and Mastich for a blue, and Ceruse  
for white, and Ivory burnt for a black. Now  
when your Mastich hath been melted with any of  
the aforesaid Colours, let it cool, and beat the  
same into powder, and lay the same powder within  
the graving, and after lay the Metal upon a  
small Charcoal Fire till the Mastich be melted,  
and it will remain fast and firm therein a long time.

*To enlay Boxes, Cabinets, or other things with  
hard Wax.*

With a Pencil draw upon your Box any thing  
that best pleaseth your Fancy, as Birds, Beasts,  
Flies, Flowers, Fruit, Leaves, Trayls, Anticks,  
Letters, &c. then take a little Knife ground  
sharp at the point, and cut or grave out the  
Work pretty deep, which you have drawn with  
your Pencil upon the Wood; when you have so  
done, lay upon the same some red or green hard  
Wax, and with a hot Iron melt and rub hard the  
Wax all over into the crevices, or works which  
you have cut out, and so let it cool; then take a  
knife and scrape away the Wax to the Board,  
and then you shall have your Work which you  
drew to be imprinted very perfectly in the colour of  
your Wax, as tho' it were drawn with a pencil,  
and will never wash nor wear off; when you  
have scraped it clean, hold it a little to the Fire,  
and it will fetch a gloss on the Wax, and make it  
to shew the pleasanter.

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*To harden white of Eggs into Gum for many uses.*

Separate the Whites of Eggs clear from the  
Yolks, and beat the Whites very well into a cleare  
Oil or Water, and when it is settled skim off the  
froth; then put the same into Bladders, and hang  
them

them in a Chimney corner, where Fire is usually kept, to dry, and in a few days the same will become as hard as Gum Arabick; in hot Weather you may hang your Bladders in the Sun to dry: This Gum may be used instead of other Gums, and with it you may varnish Prints or other things that are washed in Colours.

*To cast off Flowers in Wax of diverse Colours.*

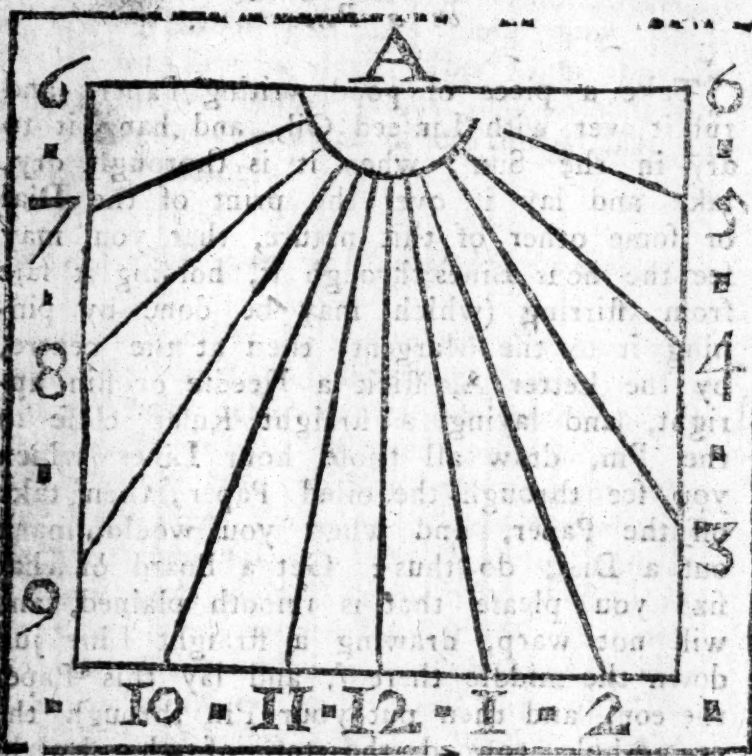
Cause a Stick to be turned round at one end, (somewhat taperwise) like the fashion of a poking Stick, lesser or bigger (according to the bigness of the Flower you intend to cast) and at the smaller end thereof with your Knife, cut Tents or Nicks in the same longwise; then take a little Panikin, and in the same melt your Wax with a gentle Fire, and when it is melted take it off, and then take your Stick (having a Porringer of fair Water by you) and dip the end into the Water, and then shake off the Water, or suck it off, and then dip the Stick in the Wax, and suddenly pull it out again, dipping it into the Water again to cool it, and then you may take off your Flower, and lay it by; and in this sort you may make as many as you please: For yellow Flowers, melt yellow Wax; for red, red Wax; for white, white Wax; for green, green Wax. Now for Stalks to your Flowers you may stick in a small Wire, or a Stem of a Raison frail or the like. You may have the coloured Wax ready made at any of the Wax-Chandlers.

*To make a South Dial against a Wall, or  
on a Pole*

Take a piece of good writing Paper, and rub it over with Linseed Oil, and hang it to dry in the Sun; when it is thorough dry, take and lay it over the print of the Dial or some other of this nature, that you may see the hour Lines through it, holding it safe from stirring (which may be done by pinning it to the Margent) then at the centre, by the Letter A, stick a Needle or Pin upright, and laying a straight Ruler close to the Pin, draw all those hour Lines which you see through the oiled Paper; then take off the Paper, and when you would mark out a Dial, do thus: Get a Board of what size you please that is smooth plained, and will not warp, drawing a straight Line just down the middle thereof, and lay this Paper thereon, and then put your Pin through the centre-hole toward the top of the straight Line on the Board, and put another Pin towards the bottom of the Line, which is your twelve o'Clock Line, with a Bodkin prick a hole through every hour Line of your Paper into the Board, and then take it off; then stick your Pin into the centre-hole of the Board again, and laying these two Pins, keep your Paper steady; then with a small Ruler close to the Pin and close to each hole in the Board, mark and draw your hour Lines; and note, that you may extend these hour Lines to what length you please, according to the bigness of the Board, and then

Figure

Figure it as you see in this Example following.



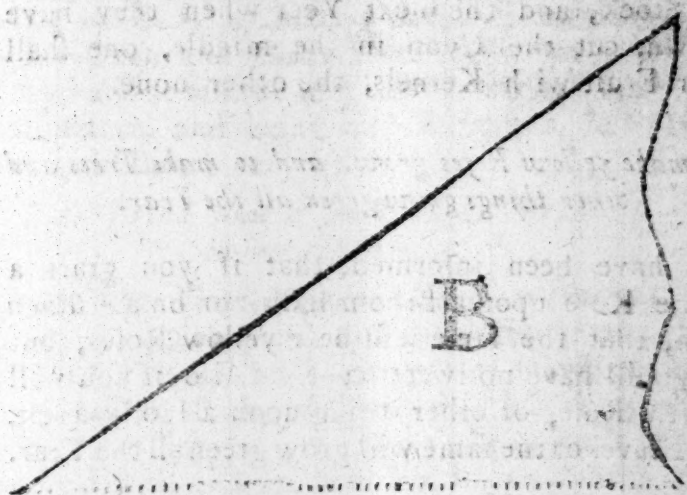
Now for the Clock, or stile of your Dial, it must be set in the twelfth hour Line, and must be just equal in height from the Board, as the Triangle Figure marked with B sheweth; the Line with Pricks is but to direct you which side must be next the Board: The Stile may be made of a thin Iron Plate, and cemented in, or of a stiff Ware; the upper end of which must be put just to the centre by A, equal to the 6 hour line: When this is done, you may now lay out the Dial according to the points of the Board, and draw the



## Variety of Inventions.

35

is done, you must get some Painter to paint it in Oil colours, and so set it up.



*To keep Cherries, Pears, Nuts, or other Fruit a Year as fresh as the came from the Tree.*

When they are pretty ripe, cut off the Stalks, and put them into an earthen Pot well leaded, and then cover them well with Honey; then stop the Pot with Pitch or Wax, that no Air may enter in, and then put the Pot in some Cellar or cool place, burying it well in Sand, and so let it remain till you use it.

*To make Grapes and other Fruit to have no Kernels.*

It is said, That if you do plant or set the smaller end of the Twig of a Vine somewhat deep into the Earth (which will take Root) that those Grapes that will grow thereon shall have no Stones: The like effect have Peaches, Apricocks, Dam-

Damscen, and other stone Fruits, if the small end of the Vines be grafted into the Stocks. Also, if you bend down both the ends of an Apple or Pear-tree Cyon, and graft them on both sides of the Stock, and the next Year when they have grown, cut the Cyon in the middle, one shall bear Fruit with Kernels, the other none.

*To make yellow Roses grow, and to make Trees and other things grow green all the Year.*

I have been informed, that if you graft a white Rose upon a Broom-stalk, or on a Furzen bush, that the same will bear yellow Roses, but they will have no sweet scent. Also if you will graft a Rose, or other thing upon a Holly-stock, the Leaves of the same will grow green all the Year.

*To make Apples, Pears, and other Fruit of several Colours, and to give them a pretty taste of Spices.*

If you will give a pleasant Colour to your Fruit do thus: For a Red boil Brasil, Tursoil or Sanders, and for a Yellow use saffron or Turmericke. Now to give them a pretty Taste or Smell, you must beat Cloves, Mace, Cinnamon, and Nutmegs to powder, and mix them with the Water of your Colours with some Honey; then with an Auger bore a Hole in the biggest part of the Tree unto the middle, something sloping downwards, and then pour your Water and Spices into the Hole; then with a Pin made of the same Wood or Tree beat it hard into the Hole, and saw off the end, and wax it about: This must be done in Winter before the Spring because when the Sap riseth, the Colour, Scent and Taste also ascendeth with the same.

*A strong and glistering Mortar for Cielings or Walls.*

It is said that in *Italy* they much use this Con-  
ceit for plaistering of their Cielings, Floors or  
Walls ; which is by mixing and well-tempering  
together Oxen and Cows Blood with fine Loam  
or Clay, and it will be of a very strong and bind-  
ing Substance, and being well smoothed, it will  
glitter and become very hard.

*To bake Bread that it shall not be hard-crust-  
ed nor crummy.*

Go to the Plate-worker, (such as maketh  
ordinary Dripping pans) and cause him to make  
a Pot, or Pots of his Latten-plate, which may  
contain half a Peck, or greater or less, as you  
please, according as you mean the bigness of  
your Loaf shall be ; let this Pot be made with a  
bottom at the lower-end, and open at the top,  
almost like a Beaker, as you may see here by  
this Figure ; and when it is done, take a little



Butter, and anoint the inside of the Pot therewith, and when your Dough is moulded, put it into the same (not full to the top) and thrust it down hard to the bottom, and then set it into an Oven amongst other Bread with the lesser end downwards, and when it is baked, it will easily come out; this Loaf will have no hard Crust, nor crumble as other Loaves do, and will shew smooth, standing like a Sugar-loaf upon the Table, and in a little compass. If you knead your Household-bread very very well, and use Leaven, and bake it, letting your Oven mouth stand open, it will be much whiter and better, and keep a long time.

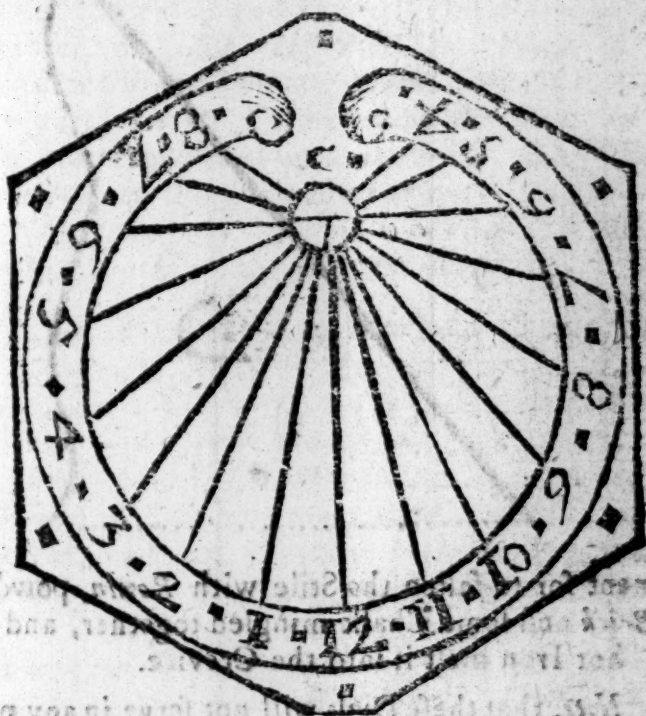
*To help the raging pain of the Teeth without drawing.*

This is performed with the Spirit of Wine, or good *Aqua vite*, by pouring it into the Ears, especially on that side where your pain lieth; but after that you have let the Water run forth of your Ears, then with more of the same Water (against the Fire) you must rub and chafe your Cheeks, and under your jaws, and behind your Ears, stroking of them upwards with your Hands toward the Neck to drive back the Humours; for it is nothing but a cold Rheum that distilleth from the Head into the Gums which causeth the pain; therefore be sure to keep the Head very warm when you have done. I have certified, that three Teeth taken out of a dead Man's Skull, and sowed in a clout or piece of Leather, and worn about them, which were much subject to the Tooth-ach, gave them present ease, and they were never troubled with the same so long as they had them about them,



*To make a Horizontal, or flat Dial.*

This Dial may be made into sundry Forms, either four, six, or eight-square, or round as you please, and it is to be placed on the head of a Post, either in Garden, Yard, or at the outside of a Glass Window where the Sun cometh: Behold the Form.



*Note,* That the hour Lines of this Dial do vary from the former, and so doth the Stile in height; but you must work with this as in the other with your oiled Paper to draw the hour Lines, and to make a Line just in the middle for your twelve o'Clock Line. The centre of this Dial is hard

*A Rich Cabinet, with*

by the Letter C, and must be more near the middle than the other, because it containeth more Hours thereon, for the other will serve but from 6 to 6, but this from 4 to 8. You may make this Dial in Stone, Wood or Metal, and remember to make the height of this Stile or Cock according to this triangle marked with the Letter D, for it must be higher, as you may make Ce.



ment for to fasten the Stile with *Rozin*, powder of *Brick* and some Chalk mingled together, and with a hot Iron melt it into the Crevice.

*Note*, that these Dials will not serve in any part of *England*, but within 10 or 20 Miles of *London*.

*A curious Receipt to strengthen and comfort the Eyes.*

This Receipt I had of a curious Engraver, who every morning before he went to work, in the corner of his Handkerchief (or a clean linen Rag) did

did put a few drops of *Aqua-vitæ*, and with the same did wipe the corners of his Eyes, Eyebrows and Temples, which did keep back the Rheum, and greatly strengthen and comfort the Eyes. I have often proved it.

*A precious Salve for those that have had any Member out of joint; called Jeremy of Brunswick's Salve.*

This famous Surgeon, with this Salve, hath healed those that had formerly their Members out of joint, or those that had been wounded and could not stir or bow the Member where they had the hurt; for by this Salve he did bring many stiff and crooked Joints again to their former Strength, to the great admiration of all Men.

*How to make the Salve.*

Take of old Hogs-grease, Ducks grease, and Goose-grease, Hens or Capon's grease, of each two Ounces, Olive-Oyl eight ounces, Opopanax, Mastich and Frankincense, of each an Ounce: Dissolve the Gums in Whitewine that are to be dissolved, and powder the other; mingle them all together, and add Wax and Turpentine to them, then boil them all together with good stirring.

*An excellent Unguent for green Wounds, especially in the Head.*

Take of the best Turpentine an ounce and a half, and as much of Gum Elemi, of Capon's grease an Ounce, melt these at the Fire, and mingle them. When you use it, melt it and anoint the edges of the Wound, and dip a pledget

of Lint in it, and then lay a Plaister on the top of the same, and roll it gently.

*To make a Sovereign Oil, or Balm for all Wounds.*

Take three Pound of common Oil, two Pound of Turpentine, Wheat that is cleansed five Ounces, St. John's Wort a Pound, Valerain, Cardus Benedictus, of each fourteen Ounces; bruise the Herbs, and infuse them in Whitewine six or eight hours, then put thereto the Wheat and Oil, and boil them on an easy Fire till the Wine be consumed; then strain them, and put the Turpentine in, and then boil them again on a soft Fire to perfection. This cures all Wounds simple or contused.

*An excellent Emplaster good for all Wounds or Ulcers.*

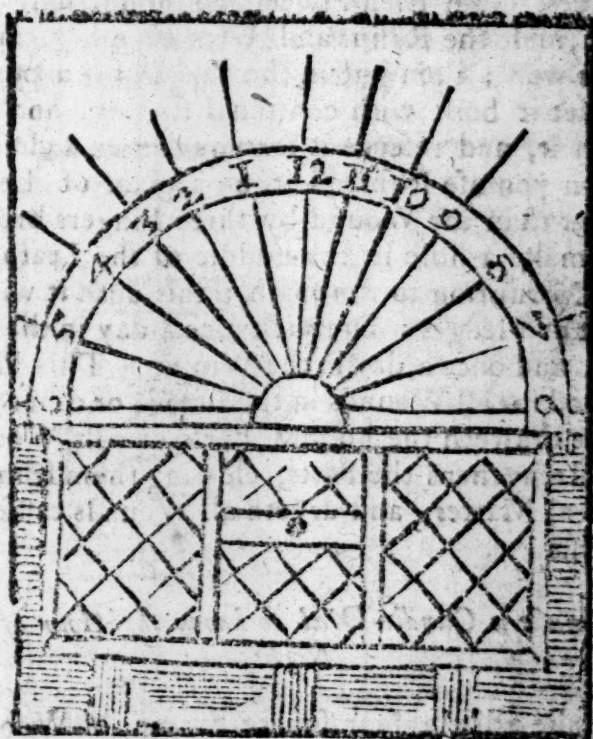
Take Deer's Suet four Ounces, Rosin and Perrosin, of each a Pound and a half, white Wax and Frankincense, of each four Ounces, Mastich an Ounce; melt the Wax and Suet, and powder the Gums, and put them together, and when they be melted, strain them thro' a piece of Canvas, then add to them a Bottle of Whitewine, and boil them all to the composition of the Wine, with continual stirring, and then take it from the Fire, and when it is almost cold, put thereto four Ounces of Turpentine washed in Whitewine, and of Camphire powdered two Ounce, then make rolls of it, and keep it for use.

*To make a Sun Dial on the Ceiling of a Room, or Chamber, to know the time of Day as you lay in Bed.*

If you have any Window South East, or South,  
which



which is best, and that is for your turn, in the lower Post or Frame of the inside of your Window, about the middle, fasten with Wax a little round piece of Looking-glass, or other Glass; about the bigness of a two-pence; you may cut it round with an old pair of Scissars; but if you place it higher in your Window on a Ledge, it will be the better (as you may see here in the Figure)



setting it level with the Horizon, and the reflection of the Sun in the Glass will shew on the Cieling the hour of the Day, the centre of the Dial will be without the Window, and not perpendicular to the Glass. This Dial must have no stile, and it must be made like the last Horizontal Dial:

You

You may draw the Circle, hour Lines and Figures with a Pencil or Coal. The black Spot is the piece of Looking-glass, the Dial is the Cieling.

*An excellent Plaister for Wounds in the Breasts, or other Parts.*

Take Rosin that is fresh, clear and sweet, a Pound, Oyl of Bays and Turpentine, of each two Ounces, Gum Elemi sweet and good, four Ounces; melt the Rosin and Gum together, and stir them well; then put in the Oyl and Turpentine, and let it boil, with continual stirring, and then strain it, and reserve it for your use in a close Pot. When you use it spread it on a piece of Leather bigger than the Wound by three Fingers breadth, and make a hole in the middle of the Leather for the Corruption to run forth; this doth it without Tent or Pledges: Dress it twice a day in the Summer, and once a day in the Winter. This Plaister is good for all Wounds in the Breast, or other parts, for it draweth the hollow Parts of all Wounds, and strengthens the Parts, clearing them from unnatural Matter, and dryeth all Wounds caused by Thirfts.

*To make a Candle-Dial to know the Hour of the Night.*

Make a little four square Frame of Wood, of a piece of a thin Trencher, making the inside thereof fit for the bottom of a Candlestick to stand in; on two sides of the Square I fastned a little piece of Wire not a quarter of an Inch long, and just where the Candlestick should stand, on a Table or Board, I made two little Holes with a Bodkin for the ends of the two Wires to go into, and then

then I set down my Candle and Candlestick into the square: Having thus done, I made a long Frame like the Frame of a Picture, and pasted halfa sheet of white Paper therein upon a thin Board, and so hang'd it up against the Wall; then in the Cieling I fasten'd a small Pulley, and on that Pulley I had two little Plummets of Lead, one broader at the bottom than the other, and ty'd them to a piece of Pack-thread at each end, and so hung them in a Pulley (as you may apprehend by the Figure following) the broadest Plum-



met I pulled down till it gave a shadow on the lower-end of the Paper in the Frame on the Wall, which

which is now the 1 and 7 o'Clock Line, and where the broad bottom cast a shadow I made a *speck* with my Pen, and then turned an Hour-glass, and when that was run out, I made another *speck*, which is the 2 and 8 Line, and so of the rest: by these *Divisions* you may with a pair of Compasses divide the rest of the hour Line upwards, you must pull down the Plummer, and set it at any time at what hour you please, as by this, it shows that it is half an hour past 4 or 10 of the Clock. You must remember to have your Candles always of one size or weight, as of the eights, or twelves in the Pound, or such as you usually burn. You may take away your Candle and Candlestick out of the square Frame, if you have occasion, and then set it down in its place again, which keeps a'l right. I have placed the Figures at each end of the hour Lines, as from 1 to 7 on the first side, and then from 7 to 12 on the other side. *Note*, When it is just 7 on the first side, then pull down the Plummer to 7 on the other side, which I hold to be the best way.

*Of the Significations of Sickneses, either present  
or at hand.*

The following Presages and Tokens of Sickneses are worth the observation of all Men: First, to prepare themselves for God, if he be pleased to call them; otherwise that they may in time before they be too much spent, have the counsel and help of learned and expert Physicians.

*Signs of Sicknes are these.*

If the Body be hotter, colder, moister, dryer, leaner, fatter, or the Colour more pale, or more swarthyish



swarthish, or the Eyes more hollow than they were accustomed to be, and on the sudden change all these are certain Fore-runners and Messengers that the Body is disposed to Sicknes, or already Sick.

*Of the Signification of the several Colours of some Urine.*

The Colours and Symptoms of Urines are many and various, as are the Diseases, and therefore ought to be judged on by the Learned ; but thus much in brief :

Red and thick Urine betokeneth Sanguine,

Red and thin betokeneth Melancholy.

White and thick signifieth Flegm.

White and thin betokeneth Melancholy.

The highness of the Colour signifieth Heat, but the pale, black, or green betokeneth Cold.

Also the grossness or thickness of the Urine signifieth Moisture, the clearness or thinness Dryness.

Urine of the Colour of bright Gold, or of the colour of Gilt, signifieth perfect Digestion or Health.

Red as a red Apple or Cherry, or base red like Bole Armoniack, or red like glowing Fire, betokeneth excess of Digestion.

Clear and white like Water, or grey as a Horn, or white like Whey, or the colour of a Camel's hair, signifieth lack of Digestion.

Pale like to Broth, or Flesh sodden, betokeneth the beginning of Digestion.

Citrine colour, or yellow, sub-citrine, or paler, signifies the middle of Digestion.

Colour of a Beast's Liver or of dark Wine,

or

or green like to Coleworts sheweth aduſion of Humours.

Urine of a Lead Colour, or black as Ink, or black as Horn, or dark above, and clear beneath, betokeneth feebleneſs of Nature, Mortification and Death.

Take a quantity of Snails, and make them void their ſlymineneſs, then dry and powder them, then make a Loſſe, and a mouthful of that will ſuffice to live on ſeven Days.



# TO MAKE FIRE-WORKS,

For either *Land or Sea.*

*And 1<sup>st</sup> of the Pike.*

**H**AVING treated of diverse modern Curiosities, I hold it convenient to speak something in brief concerning Works for Service, both by Land and Sea, which may thus be performed.

If you would make good a Breach, or enter a Ship, take strong Canvas, being cut, sew'd, and ty'd hard on a Pike with Marlin Cord; then with this Receipt following (being compounded and worked up together) do thus:

Take Roch-water one part, and Petre in Meal, as much Sulphur mealed two parts, three parts of Rosin in roch, Turpentine one part, as much of Linseed Oil, one half part of Verdigrise, Bole Armoniac, Bay-salt, Colophonia, of these three one third part; and if you think fitting, half a part of Arsenick; coat the same over with this liquid mixture melted in a pan or pot; then take four parts

E

of



of Pitch, one of Linseed-Oil, a third of Turpentine, one part of Sulphur, 'Tar one third part, and one part of Tallow. After these are melted, being cold bore two holes in each of the same an inch deep with a sharp Bodkin of Iron, filling the same with fine bruised powder, and put in each hole a little stick of two or three inches long, to be taken out when you would fire the same; (this Composition will burn furiously.) If you please, you may fasten to the same Receipt on your Pike, divers light Pipes or Canes, of Iron, or Brass of six or seven inches long, being Pistol or Caliver bore (as the Figure marked with B sheweth) placing the touch-hole thereof close to the Canvas, boring the said Canvas thro' and priming the same with fine Powder, pasting a Paper thereon, and then coat the same over as before said; this being charged with Powder and Bullet, will do great execution in a Throng, either defensive or offensive.

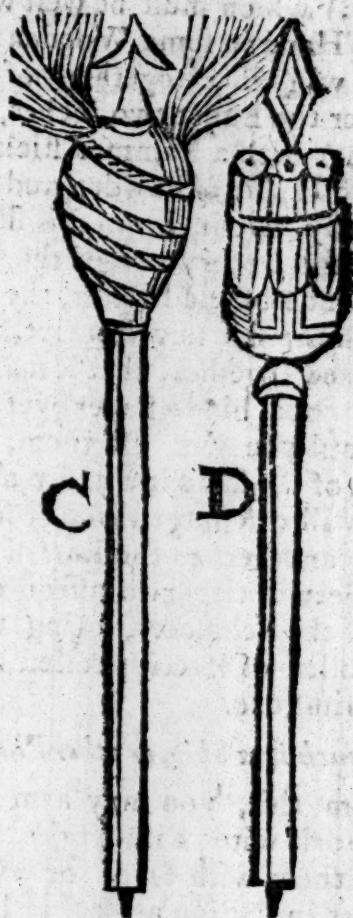
*To arm a Dart or Javelin with Wild-fire for  
Sails or Sides of Ships.*

You may arm a Dart, Javelin, Partizan or suchlike Weapon to do excellent Service, being in the hand of a valiant Soldier, as you may see by the Letter C in the same; the same should be filled with the self-like Receipt, as before shewed for the Pikes with Wildfire, which will be a very good Weapon to go into the Sides or Sails of Ships. Or you may place upon the Staff of your Javelin certain Pistol-barrels of one length about ten or ten or twelve inches, letting the same into the Wood round about the Staff a little, as a Pistol-barrel is into the Stock (as the Figure marked with



# Variety of Inventions. 51

with the Letter D sheweth) which Staff should have so much substance at the one end, whereto you may nail the same Barrels fast at the breech; and about the midst of the same put over a Hoop of Iron, as close as ever you can, the which is so



be charged in this manner following, viz. First charge every Barrel with two inches of Powder, after put in a Bullet a little lower than the Bore

of the same Piece; then take of this slow Receipt following.

Of bruised Powder four parts, of Salt-petre in meal, Linseed Oyl, Brimstone, finely beaten, Varnish, and of Willow or Hazle-cole moistned with a little Vinegar; (of all these five last Ingredients one part;) which must be well wrought together with the Hand in some Wooden Vessel, till you feel that it will cling together, of which you must put in after the Bullet two inches, and thrust the same together with a Rammer stick; and then again put in two Inches of Powder, and after that a Bullet; and lastly, two inches of this slow Receipt, until you have filled every one of the said Barrels within half an inch of the Mouth, the which is to be filled up with the said slow Receipt, and Powder bruised and mixed together, that it may the sooner fire: This being done, bind a Paper over the Mouths of the same, until you will use them, and giving Fire to any one of the same it will fire all the other, and every one will discharge three or four Shots a-piece one after another, to the hurt of the Enemy, being used in Service either to offend or defend, to the pleasure of the Beholders, being used in triumph with Bullets of Receipt rolled in Tow, and coated with Brimstone.

*To defend a Breach in a Ship, or other Place of Defence.*

To perform this, you may arm a Partizan, Javelin, or Fork with Fire-works, and to shoot every one of them with seven or eight Pistol or Musket-bullets in nailing a Plate of Iron cross the the Pike or Point of the said Javelin, or between the Grains of the Fork piercing certain Holes thro' the same, unto which with a strong Wire you may make fast on either side so many Pipes of Iron, of  
seven

seven or eight inches long, as you think convenient to fix upon either, or any of the said Weapons, and charging the same with Powder, Bullet and Wadd, you may cause the same to fire one after another, in filling a roll of Canvas sewed together, (as the Figure F sheweth) with slow Receipt, and coated as before shewed; and this being placed artificially upon the short Barrels or Pipes (as the Figures G H sheweth) and primed with

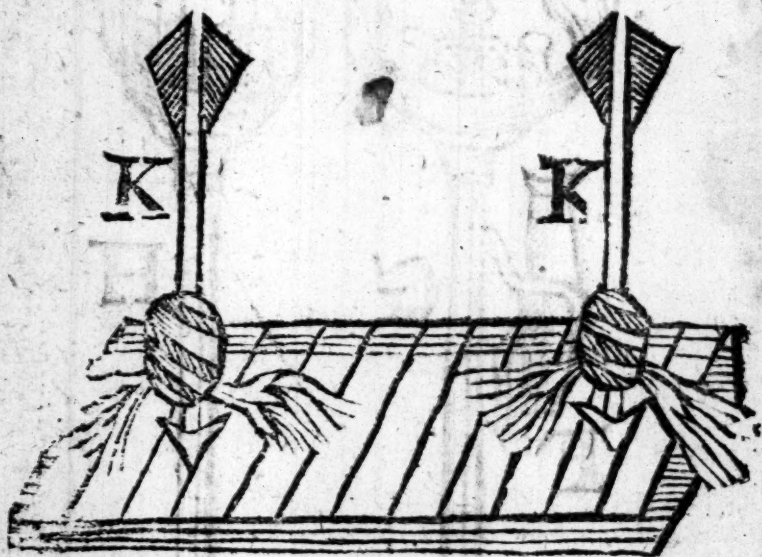


fine Powder directly against the Touch-holes of the Barrels, pasting a little Paper over the same, firing the said Trains at both ends, which as they burn, shall

shall still discharge the short Pieces one after another, to the great hurt of the Adversary.

*How to burn wooden Bridges, Gates, Houses, &c.*

To perform this and the like military Service, if you can come to anoint the same with some such liquid Composition as before shewn for the Coating of Fireworks, melting in the same a good quantity of bruised Brimstone, and flicking in the same Arrows of Wildfire made in proportion as the Figure at K doth shew. The *Recipes* may be made as the former for Pikes, with Wildfire, which will certainly set the same on fire, for the Receipt is so forcible, that it will certainly burn in the Water.



*How to do excellent Service against an Enemy who would enter a Breach, a Gate or Bridge, a Ship, &c.*

If that the Enemy will enter (and that you intend not to yield) it is necessary to have in readiness



ness divers hollow Bullets, made of two plates of Iron, or other meta, so that the one may close about the other round like a box, which being filled with pebble Stones, square pieces of Iron, called Dice shot, Musket-bullets, or the like, which being discharged out of a murdering Piece, it will do great execution: If you will fill cases of Wood, made like unto a Lanthorn, with the same stuff, it will perform the like Service, being shot out of a Murdering Piece: Behold both the Figures marked with the Letter A foregoing.



*How to prevent a Train of Powder laid to blow you up before you enter a Ship or other Place.*

If you imagine that there is some Train laid to blow you up (as it often happeneth) you may prevent the same by washing certain Purfes of Canvas, filled half full of good Corn powder, and with eight or ten fiery Bullets of an inch, or an inch and half in height, and filling the other part of the Purse with slow Receipt, you may, when you think good (the Receipt being well fired) throw the

the same from you, which will burst in pieces after the lighting on the ground, and disperse the said inclosed Bullets here and there, which Bullets will burn furiously, and if there be any Train of Powder laid near, it will presently fire the same. The said Purfes are very good to throw out of hand, or may be shot out of a Mortar-piece amongst Men in Battle-array, to disorder them, or into a Town; the Figure B sheweth how to fill the Purfes, and the Letter C sheweth the proportion of it; being made up, filled and coated over.

The Receipt for making these Bullets of Wild-fire following: Take of sulphur in meal six parts, of Rosin in meal three parts, melting the same in some pot or pan over a slow Fire; then take of Stone-pitch one part, of hard Wax one pound, of Tar one fourth part, of Aqua-vitæ one half part, of Linseed-Oyl as much, Verdigrise one fourth part, and of Camphire one eighth part, melting all these together likewise, and stir into the same two parts of *Petre* in meal; and taking the same from the Fire, put therin four parts of bruised Powder, working the same well together in your hands, and roll the same round of the bigness that you would have your Balls of, boring two holes thro' the same a-cross, which when you would use must be primed full of bruised Powder; these Balls will be as hard as stone, and need no coating, and being fired, will burn furiously, and cleave to any thing, not diminishing in quantity being burnt to ashes, which Ashes will kindle an Oaken board: If you please, you may shoot these Bullets out of a Piece of great Ordnance. The Figures for the Purfes here follow:



*To drive away Mice.*

Take Vervain and steep in Water 24 hours, and sprinkle it about the House, and they'll go away.

*To make Hair quickly grow.*

Take the Juice of Nettles, that grow in the Sun-rising, moisten your Comb Teeth with it, and every Morning comb the Hair upward. *Probatum est.*

*To whiten Teeth.*

Take Syrup of Roses, Rose water, Honey, Plantane-water, of each half an Ounce, Spirit of Vitriol four Ounces, mix them together, and then rub your Teeth with a linen Cloth, and wash them with equal parts of Plantane and Rose water, or rub your Teeth with Brickdust, and it will whiten them.

*To make a great deal of Cream.*

Take a red Snail, and by a Thread let him hang in the middle of your Cream-Vessel, and all that is above the Snail will turn to Cream.

*Heart.*

*Heart-burn.*

Chew five or six white *Pease* some time; then swallow them and keep in your Breath, and it will cure you.

*Deafness and Noise in the Ear.*

A little Oyl of bitter Almonds put into the Ear upon a little black Wool.

*Consumption.*

Follow after the Plow, or walk in a Morning and cut up a Turf of Grass in the Fields, and smell to it a pretty while.





## EXPERIMENTS in Painting, &amp;c.

**H**AVING treated of these Matters in *Art's Master-piece* and *Art's Treasury*, a little I have to add; that, To be a Proficient in this Art, you must provide a Grindstone of Marble, or a hard Rance, or some other close grain'd Stone that is not spongy or full of small Pores, otherwise it cannot be well cleaned, and the Relicks of the Colours will spoil the Beauty of those Colours which you grind after thereon: This Grindstone shou'd be about a Foot and half square, and such weight and thickness as it may be steady and fast, that it may not move when you grind upon it.

2. You must have a Mullet, which is a pebble Stone of the shape of an Egg, the bigger end whereof you must break off, and grind it flat and smooth with Emery, or some sharp Sand, upon some other hard flat Stone; let the Edges be well rounded off to make the Colours slide better; when you move it round, about two inches or three at most is sufficient for its diameter on its flat end, let it be about five inches high for to command it better; when you grind with it. If you cannot get a spotted Marble (which is of a half Colour compacted of Kernels as it were in its Greet) you may use any sort of hard Marble, white or black; some use a Slate which they cover their Houses with in *Suffex*, which for common Painting I have known do very well, if it be above two Foot square, and an inch and half thick; if you cannot get a good shap'd Stone for your Mullet, a piece of any smooth-sided Stone cemented (with Brickdust and Rosin mixt) in a piece

piece of Wood fitly shaped to hold it by may do as well as the best mullet you can buy.

3. Get a Volder, which is a Lanthorn-horn, of three inches one way, and 4 the other; with this Volder you clear off the Colours from the Stone after ground, it keeps them together whilst grinding, lest they spread too much; if you have not this, a smooth piece of Wood of the same size will serve, if it be cut thin and made very sharp and even on the edges.

4. You must have Pans and Pots of Tin or Earth of divers sizes, as the quantity of Colours to be ground require, in which you still put them as grinded, till so much colour of each sort be ground as is needful for your Design and Work; but if you wou'd grind at once so much of each Colour as may suffice for a long time together, put them ty'd up close in Ox, Hogs or Sheeps Bladders, which will keep them a long time from drying or spoiling: I have known Colours so ty'd up in Bladders for above 15 years were fit for use when opened, after they were mixt with a little fresh Oil again.

5. You must have Brushes and Pencils of all sorts and sizes; the Brushes are all made of Hogs Bristles, of divers shapes and sizes, of which some must be flat, and some round, the round ones are from a quarter of an inch diameter, to two inches; you must use the larger for priming your Work, and laying such Colours useful in great quantities, and colouring the Superficies of large Work, whether Wainscot, Posts, or Pales, &c. but you use the smaller Brushes in such places as the larger sizes can't well work in: your flat Brushes are chiefly used for drawing of Lines, and to imitate Walnut and Olive Work,

Pencil

Pencils are made of smaller and finer Hair, which are also of several sizes, but are generally all round and fitted commonly into Geese, Swans, or Duck Quills, ficht and pointed: There are also a larger sort of Pencils in Tin Cases, and some in Stocks like Brushes, which are all made of fine Hair. When you chuse Pencils and Brushes, mind that the Brittles for your Brushes be fast bound in their Stocks, and that the Hair be strong, and lie close together, for they will never work well if the Hair spread and do not lie close, for the Brittles will come out and so spoil the Work when used, if they be not fast bound in the Stocks, which disparageih the Work when the Hair are seen buried up and down therein; therefore, if they be not fast bound, put in some thin wooden Wedges between the Thread with which they are bound, and it may prevent it; for so<sup>l</sup> you will secure and make the Brittles tight.

In chusing pencils, especially pointed ones, put them in your Mouth and moisten 'em a little, drawing them out between your Tongue and Lip; if they come out with an entire sharp point, not cleaving in two, then such are good; but see that they are thick and full set next the Quill, and fast bound; if they are lean and thin next the Quill, they'll not draw clever and sharp, neither will they stand well to your Work. Be sure sit a neat Stock to every Case or Quill-pencils at least nine inches long, for you cannot command it well, nor work so neat, unless you hold your Pencil a good distance from your Hand. You must support your Hand as usual with a Ruler, one end whereof hold in your left Hand, and let the other rest on your Work, yet so as it may not injure it. I shall now give you the Value of those Utensils before premised.

A Marble Grinding-stone, siz'd as before mention'd, may be from 10 s. to 5.

A Mullet 1 s. 6 d. or 2 s.

Brushes of the largest size 6 d. each, the smaller from 4 d. to 1 d.

The largest Pencils of fine Hair, either in Wooden Stocks or Tin Cases, from 8 d. to 2 d. each. Those in Swan Quills 1 d. but those in Goose or Duck Quills about 6 d. a dozen.

The best Black Lead Pencils, in Cedar Cases, about 3 d. a-piece.

An Ounce of the finest Black-Lead in the lump will do as much service as six Pencils, and if good, will cost about 6 d. Brass Compasses, from 18 d to 6 s. a pair. A pair of about eight inches long in the Shank, about 2 s 6 d. A pair of the same size with three points, viz a Steel, a Pen point, and a Black-Lead point, will cost about 6 s. if well made.

Crucibles (if large) about 2 d. a piece, the other sizes a Penny, but the smallest a Halfpenny.

All sorts of Pencils you may buy at the *Colour-shops*; but the Brass Compasses and Squares are to be had at the Mathematical Instrument-Makers, the crucibles at the Ironmongers in *Poster-lane*.

## S E C T. II.

*Of the several Colours for painting in Oil; also how to make, and the Nature of them. And first of Whites.*

**H**ERE you must observe, that *White Lead* is chief of all *Whites*, but the full and plain description of its making is to be found in Sir *Philip Vernatti's Philosophical Transactions* printed



ted and communicated to the *Royal Society*. There are two sorts of this to be had at the *Colour-shops*, the one is call'd *Ceruse*, which is the purest and cleanest part; the other is call'd only *White Lead*. These *Whites* work with ease, and will grind as fine as the Oil itself; on what Work soever it be laid, it binds hard and lies smooth. 'Tis best to work in Linseed Oil, if you paint Stonework or Timber work with it, for it binds it hard when laid very stiff on the Work, but 'tis best to mix it with drying Nut-Oil if it be used within doors, because Linseed Oil turns yellow, spoiling its beauty, which Walnut-Oil prevents, and keeps it in its constant whiteness.

There is another *White*, call'd *Flake White*, the which some hold to be best, but perhaps the scarcity and dearness of it may give it the preference; but the best *Ceruse* may be as good, and 'tis much cheaper.

### Of Blacks.

*Lamp-black* comes from the North Countries, and I think is only the Soot raised from the fat refinery parts of Fir trees, perhaps from *Norway* or *Sweden*. This *Black* is most used, being cheap and plentiful; 'tis good for most Uses, and will on common Occasions work without grinding, if mixt with Linseed Oil, because it is fine of itself, but it requires a long time to dry if thus used, unless it be mixt with much drying Oil, or *Verdigrise* finely ground, which is better. Some add Oil of Turpentine, for without some of these 'twill not dry in a long time. If you burn this *Black* in the Fire till red hot, and it cease smoking, 'twill destroy the fatness in it (which keeps it from drying) and make it dry much sooner; but then

it will not work fine, unless it be ground with Oil. There is another sort said to be the Soot of a Lamp, which some hold to be a finer body and brighter colour, but it is not to be had in great quantities, so used only in very fine work.

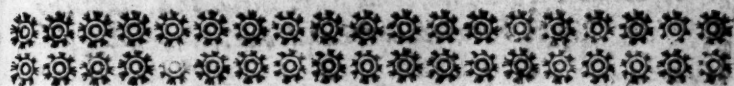
*Ivory-Black* is made of the waste Fragments of Ivory, or Comb makers Raspings; these put up close in a Crucible and burnt or charred to a black Coal, make a delicate *Black*, being ground very fine. This you may have at the Shops well prepar'd, and levigated or ground fine with Water on a marble Stone, and afterwards dry'd in small lumps. It will grind more easily in Oil when 'tis thus prepar'd, and will lie as smooth as most others do, but is not used in common work, because 'tis dear.

*Willow Charcoal* ground fine in Oil makes a very good *Black*, but is not much used, because it is not so easily got as *Lamp-Black*.

### Of Greens.

The most useful *Green* is *Verdigrise*, and is made out of Copper; the best is said to come from *Montpellier* in *France*; see Mr. Ray's Travels, p. 454. This delicate *Green* inclines to a *blue*, but makes the best *Grass green*, if mixt with a little *Pink-yellow*. It requires some Labour to grind it fine, but when so done, it works well, and lies with a good body. There is a sort call'd *Distilled Verdigrise*, which when purified from Dross and Filth makes very fine work, but is too dear for common Painting.

*Green Verditer* and *Green Bice* are both of a sandy nature, and so not used much, unless in Landskips where they are for Variety.



# *Hocus Pocus;*

O R,

## *Legerdemain.*

---

*How to make it freeze by the Fire-side.*

**C**ALL for a Joynt stool, a Quart-pot and a handful of Snow, a little Water, a handful of Sale, and a short Staff or Stick; first, pour a little Water upon the Stool, and upon it set a Quart-pot, and put the Snow into the Pot, the Salt also, but privately, then let him hold the Pot fast with his Left-hand, and take the short Stick in his right, and therewith churn the Snow and Salt in the Pot, as if one should churn for Butter. and in half a quarter of an hour the Pot will freeze so hard to the Stool you can scarcely, with both Hands, pull it off from the Stool. *Probatum est.*

F 3

*H. 42*

*How to make two Bells come into one hand, having put into each Hand one.*

This Feat must be perform'd with three Bells : you must put one Bell into your left sleeve, then put one Bell into one hand, and another Bell into the other hand, (they must be little Morris Bells) withdraw your Hands, and privily convey the Bell in your left hand into your right ; then stretch both your hands abroad, and bid two Folks hold your hands fast, but first shake your hands, and say, Do you hear them ? The Bell that is in your sleeve will not be known by the rattling but that it is in your hand : Then say, he now that is the arrantest Whore master or Cuckold of you both shall have both the Bells, and the other none at all : open your hands then and shew them, and it will be thought that you deal by Art-Magick.

*How to make a Jugling Book, or Book of Waggers.*

You must provide a Paper-book in *Octavo*, of what thickness you please, first turn over even Leaves of it, and then, upon both the open sides, draw or paint the Pictures of Flowers, then turn over seven Leaves more, and paint the very same : this until you have turned the Book once quite over : Then unto the farther painted Leaves paste a little stay of Paper or Parchment, one directly over another. Then turn over the Book again, and having turned every sixth Leaf, draw the Picture of Flower de Lucis, and then paste stays of Parchment upon them, as you did upon the first ; but these stays must all of them be a little lower than the former. Then turn over the Book again.



again, and after the fifth Leaf, throughout the Book is turned, paint Horns: Do this until you have painted the Book full of Pictures, only let there be one part of the Leaves fair Paper; having thus finish'd the Book, when you use it, hold it in your Left hand, and with your Right hand, your Thumb set upon the Parchment flays, shew them orderly and nimbly, but with a bold and audacious Countenance, for that must be the grace of your Tricks: say, This Book, is not printed thus as some of you may suppose, but it is of such a Property that whosoever bloweth on it, it will give the Representation of whatsoever he is naturally addicted unto, and then turn the Book, and say, see, it's all fair Paper.

*Boxes to change Grain.*

Make one Box of Wood, Tin, or Brass, let the bottom fall a quarter of an inch into the Box, and glew thereon a laying of Barley, or such like Grain: Draw the Box with the bottom downwards, and say, Gentlemen, I met a Countryman going to buy Barley, and I told him I would sell him a Pennyworth, also I would multiply one Grain into so many Bushels as he should need, then cast a Barleycorn into your Box, and cover it with a Hat, and in the covering it, turn the bottom upside down: then cause somebody to blow on the hat, then uncover it and they will think strangely of it. You may make another Box of Wood like unto a Bell, to hold so much just as your former Box will, and make a bottom to this Box of Shoe Sole Leather, to thrust into the bottom of the Bell; then fill it with Barley, and throw up the bottom: This will keep the barley from falling out.

your Pocket, and set it down gently upon the Table, and say, I will cause all the Barley to go out of my Measure into my Bell, and then with a Hat cover the Box that hath the Barley glew'd unto it, and in covering it, turn it with the Barley downward, then say, first let us see whether there be nothing under the Bell, and cl'ap it hard down upon the Table, so the weight of the Barley will thrust the bottom down; then bid some one blow hard on the Hat, then take it up, where they will see nothing but an empty Measure, then take up the Bell, and all the Barley will pour out Sweep it then presently into your Hat or Lap. lest their busy prying may chance to discover your Leather bottom.

*A Conceit to procure Laughter.*

Take a Ball in one Hand, and another in the other, and stretch your Hands as far as you can one from the other, and if any one will, lay a Quart of Wine with him that you will not withdraw your Hands, and yet will make both of them come into either Hand, which they please. It is no more to do than to lay one down upon the Table, and turn your self round, and take it up with the other Hand, and your Wager is won, and it will move no small Laughter to see a Fool so lose his Money.

*How to knit a hard knot upon an Handkerchief,  
and seem to undo the same with Words.*

Make one plain loose knot, with the two corner ends of a Handkerchief, with seeming to draw

draw the same very hard, hold fast the body of the said Handkerchief (near to the knot) with your Right hand, pulling the contrary end with the Left hand, which is the corner of that which you hold. Then close up handsomely the knot, which will be yet somewhat loose, and pull the Handkerchief so with your Right-hand, as the Left hand end may be near to the knot: then will it seem to be a true and firm knot: and to make it appear more assuredly to be so indeed, let a Stranger pull at the end which you hold in your Left hand, while you hold the other in your Right-hand; and then holding the knot with your Fore-finger and Thumb, and the nether part of your Handkerchief with your other Fingers, as you hold a Bridle, when you would with one Hand slip up the knot, and lengthen your Reins. This done, turn your Handkerchief over the knot with the Left hand, in doing whereof, you must suddenly slip out the end or corner, putting up the knot of your Handkerchief with your Fore-finger and Thumb, as you would put up the aforesaid knot over your Bridle. Then deliver the same (cover'd and wrapt within the midst of your Handkerchief) to one to hold fast, and after the pronounciation of some Words of Art, and Wagers laid, take the Handkerchief and shake it, and it will be loose.

*To transform any one small thing into another form by folding of Paper.*

Take a Sheet of Paper, and fold or double the same so as one side be a little longer than the other: Then put a Counter between the two Leaves of the Paper up to the middle of the top of the fold, holding the same so as it be not perceiv'd, and lay a Groat

on the outside there right against the Counter, and fold it down to the end of the longer side : and when you unfold it again, the Groat will be where the Counter was, and the Counter where the Groat was, so as some will suppose that you have chang'd the Money into a Counter, and with this many Feats may be done.

*To seem to blow a Six pence out of another  
Man's Hand.*

Take a Six-pence, blow on it, and clap it presently into one of your Spectator's Hands, bidding him to hold it fast : Then ask of him if he be sure to have it, then to be certain, he will open his Hand and look. Then say to him, *Nay, but if you let my Breath go off I cannot do it :* Then take it out of his Hand again, and blow on it, and, staring him in the Face, clap a piece of Horn in his Hand, and retain the Sixpence, shutting his Hand your self. Bid him hold his Hand down, and slip the Teaster between one of his Cuffs. Then take the Stone that you shew Feats with, and hold it unto his Hand, saying, *By vertue hereof I will and command the Money to vanish you hold in your Hand ; Vade, now see :* when they have look'd, then they will think that it is chang'd by vertue of your Stone. Then take the Horn again and seem to cast it from you, retaining it, and say, *Vade ;* and anon say, you have your Money again : He then will begin to marvel, and say I have not : say then to him again, you have, and I'm sure you have it : Is't not in your Hand ? If it be not there ; turn down one of your Sleeves, for 'tis in one I'm sure, where he finding it, he will not a little Wonder.



*To cast a piece of Money away, and to find it in another Man's Mouth, Pocket, or Purse.*

The Jugler calls for some one piece of Coin, as a Teaster or a Shilling, of any one in the Company, he willeth him to mark it with what Mark he will, then he takes it and casts it away, and coming to his Confederate, (who is furnish'd beforehand with the like piece of Coin, mark'd with the very same Mark) bids him deliver the Money out of his Pocket, Purse, or if he say the word Mouth for this is concluded of beforehand. Now *this* Confederate (to make the matter seem more strange) will fume and fret, asking how he should come by it, til having found the Mark, he will confess it to be none of his, wondering at his Skill, how he should send it thither: and all the rest be taken with a real Admiration of his extraordinary Cunning.

*By the sound of a Counter phillip'd to tell whether Cross or Pile.*

The Jugler draws a Counter out of his Pocket, and saith to the Company, *See here is a Counter, take it who please, and let him phillip it up, and I will by Cunning tell you whether Cross or Pile be uppermost by the very sound, for you shall hoodwink me.* Now there are three or four more Confederates in the place, who seeming Strangers as well as the rest, will be very importunate to have the phillipping it, and before one of these shall have it, who by some sign of the Fingers or Countenance (foreknown to the Jugler) gives him Information after he is demanded. Of the same nature is that Trick

Trick formerly mention'd in the Book, and call'd,  
*The Dec. lat on of John Baptist.*

To make one dance naked is a Trick of the same nature, for the Party aforesaid is agreed to do it, and also the manner and circumstances: So that the Jugler, to blind the People, pronounceth sundry Words to such a Person, he then begins to rave like a Mad man, and puts his Cloaths off with a kind of violent Carefulness, and tho' (*God knows*) the Party knows as well what he doth as yourself that reads it.

After the same manner shall you know what Money another hath in his Purse, and casting Money into a Pond, findeth it under a Stone or Threshold in another place.

Also to make a piece of Money to leap out of a Cup, and run to another by means of a small Hair fastned to the Money, which Hair the Confederate guideth. With a multitude of suchlike strange Feats which may seem impossible (to the Judgment of the common People) to be effected without assistance of the *Devil* or some *Familiar*, which to nominate is neither needful, nor will my Occasions permit so much Leisure as to do it.

*Bread to encrease a quarter, and keep 30 Days longer than common Bread.*

Boyl *Pomkins* in fair Water. till it grow thick, and with that Water make your Bread, and it will be very good. *Probatum.*

*Another.*

Take your Bran and boil it in a Kettle of Water, then strain it, and make your Bread with that  
white

white Water, and it will be a quarter more, and more substantial than ordinary.

*Another.*

Bread may be made of Parsnips, Carrots, Turnips, or Potatoes : Boyl'd well, then mash'd, and with some Flour mix'd with it, make it as other Bread.

*To grease any creaking in Wood.*

Rub it with Soap, and it is done.

*To kill Ants.*

Shit upon their Nests. *Probatum.*

*To catch Moles.*

Put Onions, Beets, or Oyl, into their Holes, and they'll run out presently.



## Experiments in Arithmetic.

A number of Men being delivered to an Officer to make thereof a square Battalion, and suddenly to tell how many Ranks he shall have, and how many Men in each Rank.

**S**uppose the number of Men delivered to be 144, there fore extract the square Root of 144, which is 12, and so many Men you shall have in Flank, and as many in File.

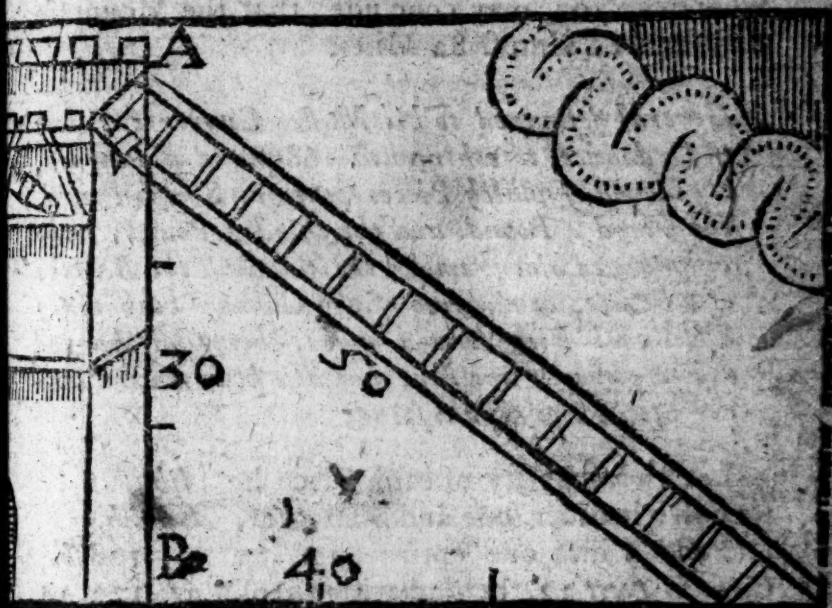
*Note, That if the number had not been a square number, there would have been some odd Men remaining.*

*The Wall of a Fort or Castle being 30 Foot high, and the Breadth of the Trench about the Wall 40 Foot broad, I demand the Length of a Scaling Ladder that will reach from the Edge of the Trench to the Top of the Wall.*

This Experiment is grounded on the 47th Proposition of the first of *Euclid*, who saith, in all right angled Triangles, the square of that side which lieth against the right angle, is equal to the two squares of both the other sides. From whence we may gather, that if the height of the Wall be squared, and the breadth of the Trench likewise squared, and those two squared numbers added toge-



together, and from them extract the square Root, that Root so extracted shall be the length of the Scaling Ladder required. As for Example in the Figure following,



Let A B represent the Fort, being 30 Foot high, and the breadth of the Trench 40 Foot, then square 30, *fecit* 900, likewise square 40, *fecit* 1600, which added make 2500, the Root of which number is 50, the length of the Hypothenusal, or Scaling-Ladder required.

*Admitt the Semi-diameter of the Earth to be 3346 Miles, and that there is a Mountain one Mile in height, I demand how far such a Mountain may be seen at Sea, or on Land?*

And the Semi-diameter of the Earth and the  
G 2 Moun-

Mountain together, *fecit* 3437, whose square is 11812969, from which subtract the square of the Semi-diameter of the Earth, *viz.* 11806096, there remains 6873, whose Root is 82 and three fourths; wherefore you may conclude, that the Mountain may be seen almost 82 Miles.

*A General delivered to his Master Gunner 3 Pieces of Ordnance, together with 168 pound of Powder, the biggest of which Pieces spent at a Shot 6 Pound, the second 4 Pound, and the third 2 Pound; who commanded him to employ them against the Battery of a Sconce, demanding of the Gunner how many Shots each Piece would make, being discharged one as often as another, and also how much Powder each Piece would spend.*

Let the quantity of each Piece be *lib.*  
 set down in order, one under another, 6 *lib.*  
 and added into one entire Sum, as 168 *lb.*  
 6, 4, 2. *fecit* 12, behind which, to 2 122 14  
 wards the right Hand set down the —  
 Sum of the Powder delivered, *viz.* 12 1  
 168, which if you divide by 12 the quotient will  
 be 14, which certainly telleth that they will make  
 14 Shots a-piece against the Sconce.

Now, To know how much Powder each *lib.*  
 Piece will spend, multiply 14 by 6, *fecit* 84 84  
 for so much will the first Piece spend; again, 56  
 multiply 14 by 4, *fecit* 56, so much will the 28  
 second spend; and lastly, multiply 14 by 2, —  
*fecit* 28, so much will the last Piece spend; 168  
 which being added into one entire Sum, the Total  
 will be 168 Pound, which is equal to the Powder  
 by the General at first delivered.

*A General having drawn the Platform of a Fort, demanded of 50 Pioneers what time they required to finish it in? who reply'd, 6 Weeks, or 36 Days, (which is all one) but the Expedition was such, that it must be finished in 8 Days; now would I know what number there must be employed?*

The Resolution of this Question (to some) may seem difficult, but to others very plain and easy; for if you multiply 50, (which is the number of Pioneers) by 36, (the number of Days which they require) and divide that product by 8, (which is the time that the Fort must be finished in) the quotient of that division will be 225, and so many must be employed to finish it in 8 Days.



*Pleasant Questions in* ARITHMETIC.

*Quest. 1. To tell the number that another Man shall think, be it never so great.*

**L**ET the Party that thinketh, double the number which he thought, which done, bid him multiply the sum of them both by 5, and give you the product (which they will never refuse to do, it being so far above the number thought) from the which, if you abate the last Figure of the product (which will always be a Cypher or 5) the number thought will remain.

*Example.* Let the number thought be 53, which doubled maketh 106, and multiplied by 5 makes 530; then if you take away the Cypher, which is in the last place, there will remain 53, the number thought.

*Quest. 2. Of the Accusation of a Thief.*

A Thief breaking into an Orchard, stole from thence a certain number of Pears, and at his coming forth he met with three Men one after another, who threatned to accuse him of Theft, and for to appease them he gave unto the first Man half the Pears that he stole, who returned him back 12 of them; then he gave unto the second half of them he had remaining, who returned him back 7; and unto the third Man he gave half the residue who returned him back 4, and in the end he had still remaining 20 Pears: Now do I demand how many Pears he stole in all? To answer this Question, you must work backward, for if you take 4 from 20, there will remain 16, which being doubled make 32, from which abate 7, and there will remain 25, which being doubled makes



makes 50, from which subtract 12, and there will remain 38, which again doubled make 76, the true number of Pears that he gathered.

*Quest. 3. Of Three Sisters.*

A certain Man having three Daughters, to the eldest he gave 22 Apples, to the second he gave 16 Apples, and to the third he gave 10 Apples, and sent them to the Market to sell them, and gave them command to sell one as many for a Penny as the other (namely 7 a Penny) and every one to bring him home so much Money as the other, and neither change either Apples nor Money one with another : How could that be ?

This (to some) may seem impossible, but to Arithmeticians very easy ; for whereas the eldest had three pennyworths and one Apple over, the second two pennyworths and two Apples over, and the youngest had one pennyworth and three Apples over ; so that the youngest had so many single Apples and one Pennyworth, as the eldest had pennyworths and one Apple over, and consequently the second proportional to them both.

They made their Market thus : A Steward coming to buy Fruit for his Lady, bought all the Apples they had at 7 a Penny, leaving the odd ones behind ; then had the eldest Sister three-pence and one Apple, the middle Sister two pence and two Apples, and the youngest one penny and three Apples. The Steward bringing the Fruit to his Lady, she liked it so well, that she sent him for the rest, who reply'd, that there were but few remaining ; she notwithstanding sent him for them, and bid him bring them at any rate : The Steward coming to the Market again, could not buy the odd Apples under a penny a-piece (who to  
content

content his Lady was fain to give it) then had the youngest Sister three-pennyworth, the middle Sister two-pennyworth, and the eldest one Pennyworth, and so had they all four pence a piece, and yet sold as many for a Penny one with another, and neither changed Apples nor Money one with another, as they were commanded.

*Quest. 4 Of one that bought and sold both at a rate, and yet in the end proved a loser.*

A Man bought 100 Eggs at three a Penny having 120 to the hundred; also he bought a hundred more at two a penny, having likewise 120 to his hundred; these Eggs being mingled, he sold them for 5 two pence, and 120 to the hundred as he bought them; the Question is, Whether he he gained or lost in that Bargain?

If you work by the *Rule of Three direct*, you shall find that his 120 Eggs at three for a Penny came to three Shillings and Four pence, and his 120 at two for a Penny came to five Shillings, which being added, makes eight Shillings and Four Pence: Then again, to see what they come to at five for two pence; work likewise by the *Rule of Three direct*, and you shall find that 240 at five for two pence, come but to eight Shillings, whereby the Seller loseth four pence of the Money they cost him.

*How to break a Staff upon two Glasses of Water.*

Place the Glasses (being full of Water) upon two Joynt stools, or suchlike equidistant from the Ground, and distant one from another the length of the Staff; then place the ends of the Staff upon the edges of the two Glasses, so that they be sharp; this done, with all the Force you can, with

and

another Staff strike the Staff which lies on the Glasses in the midst, and it will break, without breaking the Glasses or spilling the Water.

*To know the Hour of the Day by the Hand and Fingers.*

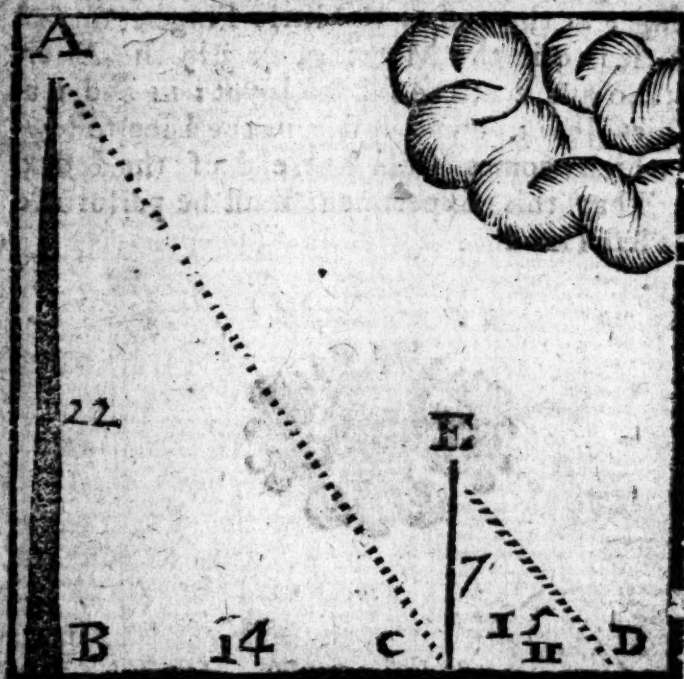
Take a Straw, or the like, of the length of the Index, or second Finger, hold this Straw very tight between the Thumb and the right Finger, then stretch forth the Hand, and turn your Back and the Palm of your Hand towards the Sun, so that the shadow of the Muscle which is under the Thumb touch the Line of Life, which is between the middle of the two other great Lines, which is seen in the Palm of the Hand; this done, the end of the shadow will shew what of the Clock it is, for at the end of the great Finger it is 7 in the Morning, or 5 in the Evening; at the end of the ring Finger it is 8 in the Morning or 4 in the Evening; at the end of the little Finger, or first Joynt, it is 9 in the Morning, or 3 in the Afternoon; 10 and 2 at the second Joynt; 11 and 1 at the third Joynt, and midday in the Line following, which comes from the end of the Index. *Note*, That this Experiment must be performed by the left Hand.



# EXPERIMENTS IN GEOMETRY.

*How to make the Altitude of a Building, or other approachable Height, by a Line and Plummets, the Sun shining.*

**L**ET the Building, whose Altitude you desire to know, be A B, representing a Maypole, casting a Shadow in a right Line on the Ground to C; at C let fall a Line and Plummets (whose



length



length before you know in Feet or Inches) observing where the end of the Shadow lights, which suppose at D, then measure the length of the Shadow of the String, and consequently the Shadow of the Building, both which being exactly taken, work thus by the Rule of Proportion.

If C D, the Shadow of the Line and Plummets 4 Foot, and  $\frac{5}{11}$  give E C 7 Foot in Altitude, What Altitude doth 14 Feet give, which is the length of the Shadow of the Maypole?

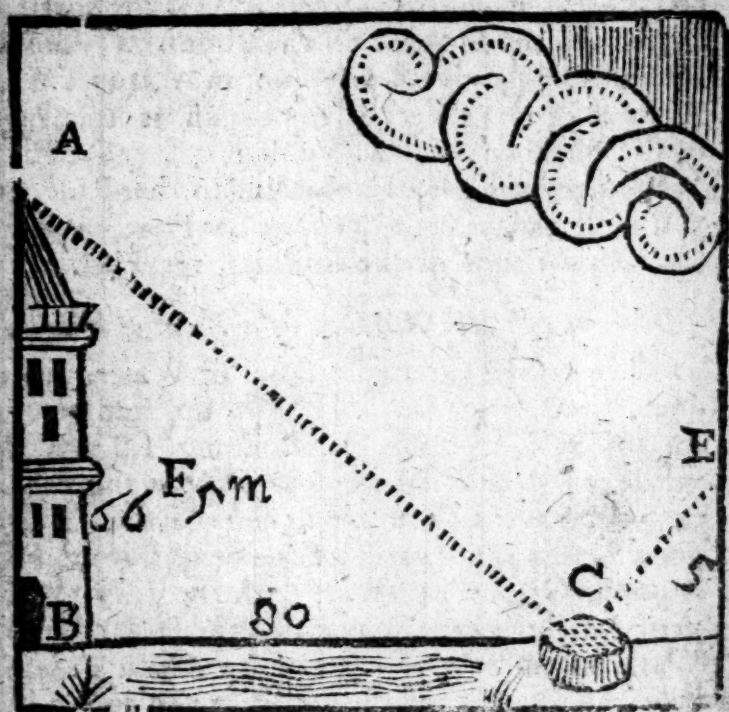
Multiply and divide according to that Rule, and you shall find in your quotient 22 Foot, which is the true Altitude of the Building required.

*How to take the Altitude by a Bowl of Water.*

Place on the Ground a Bowl of Water, which done, erect your Body straight up, and go back (in a right Line) from the Building, till you espy in the centre or middle of the Water the top of the Altitude; which done, observe the place of your standing, and measure the height of your Eye from the Ground, together with the distance from your standing to the Water, and the Distance of the Water to the Base or Foot of the Altitude; which being all exactly taken, will help you to the Altitude required, by the Rule of Proportion.

*Example.* Let the Altitude required be A B, the Bowl of Water placed on the Ground at C, then go backwards from C, your Body erected as straight as may be to tie your Eye at E, spy the top of the Altitude A B in the Water, which found, observe the place of your standing at D, and measure the Altitude of your Eye to the Ground, which is 5 Foot, and likewise the distance from D to C, which is 6 Foot; then measure the distance from C to B, which is 80 Foot; these three distances work by the

the Rule of Proportion, thus: As the distance C D is to the Altitude E D, so is the distance C B to the Altitude A B, which is six Foot eight Inches. Observe the Figure following.

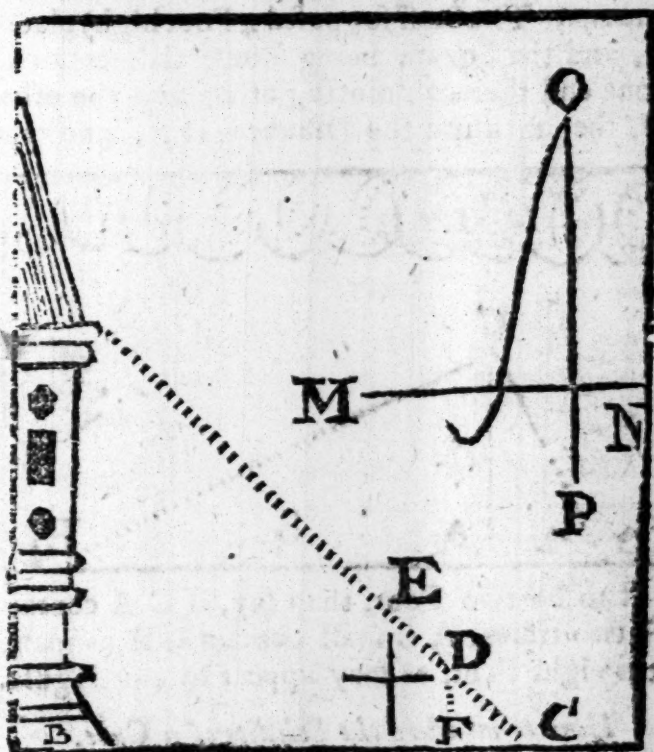


*How to find the Altitude of a Building by two Sticks of one length joined in a right Angle, without Arithmetick.*

Cause two Sticks to be joined in a right Angle, as is in the Figure M N, and O P, having at O a hole made wherein to hang a Thread and Plummet.

The two Sticks being thus prepared, come to the Building, whose Altitude you require, which Building let be A B, then applying the end A of your cross Staff to your Eye, hold it up or down till the Thread and Plummet hang just upon the Line C D;

D; then go back or forward (as occasion is given) till your Eye at D looking over E espy the top of the Building at A, which found, mark well the place of your standing, which is at F, and measure the distance from your, Eye to the Ground, which is D F, and set that some Distance from F to C and measure the same distance from C to B, for that is the true height of the Building A B, as may appear by the Figure following, and likewise by the Theorem on which it is grounded.



How to find a distance by the two Sticks joined square.

This Experiment is grounded upon the fourth Proposition of the sixth of *Euclid*.

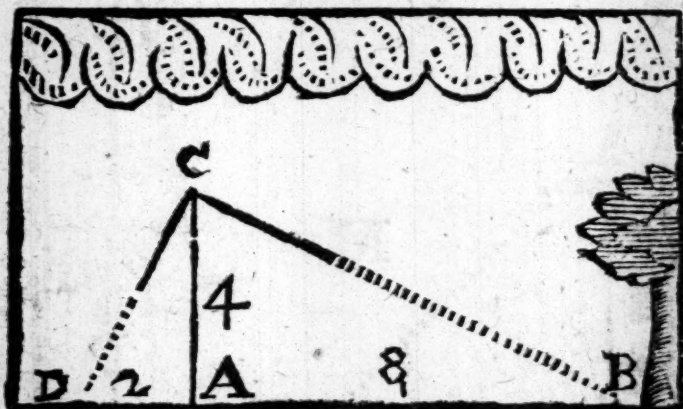
Let the distance which you desire to know be A B, set up a Staff at A of 4 Foot long, (more or less)

H

less

less at your Pleasure) at A C, at the end of the Staff C place a Thread to D, then hanging the Angle of the square O on the top of the Staff at C, lift it up or down, till you see the farthest part of your Longitude, the square so remaining and the Staff not removed, draw the String that is fastened at C close by the side of the square till it touch the Ground at D, then measure how many times the distance D A is contained in the Staff, or so many times is the Staff contained in the Longitude.

*Example.* The Staff supposed 4 Foot high, placed at A, and the Square being hung thereon at C, the one end thereof pointing at B, and the other to D, then measure the Distance D A, and you



find it to be two Foot, then say, if C A contains D A two times, A B shall contain C A as many, that is eight Foot, as may appear by the Figure.

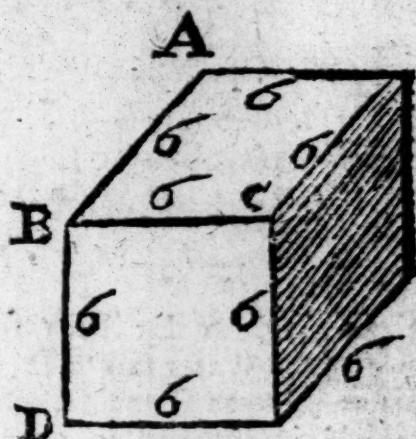
*How to measure the Solidity of a Cube.*

The Cube is a Body composed of 6 square Surfaces of equal proportion, and is measured in manner following. If you multiply any one side in itself cubically, it produceth the said Cube.

*Ex.*



*Example.* Let the Cube (A B C D) be given to be measured, the sides whereof are six Inches in length, the square whereof is 36, which again multiplied by the Root, produceth 216, which is the content of a Cube in Inches whose sides are six Inches in length.



*How to measure the solid content of any body, how irregular soever it be, the form or fashion not regarded.*

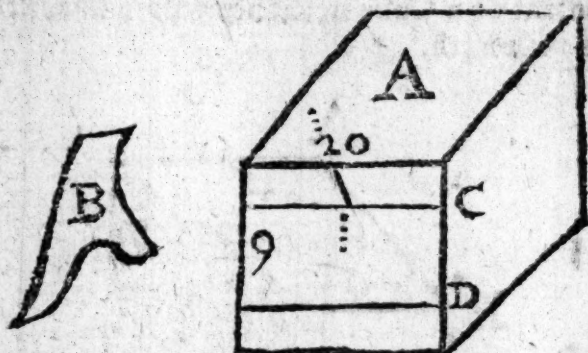
Prepare an hollow Cube, into which put your irregular body, which being placed therein, pour in so much Water, till it no more than cover the body in the Cube, then make a mark in the inside of the Cube, where the superficies of the Water toucheth. This done, take out the irregular Body, and mark again directly under the former, where the brim of the Water now toucheth, for the distance of these two marks multiplied by the square of the Cube's side produceth the crassitude of that irregular body.

*Example.* Suppose A to be the Cubical hollow Vessel, whose inward side suppose to be 20 Inches:

B 2

B

B the irregular body, whose Crassitude I desire. First therefore I put B into the hollow Cube A, and pouring in Water till it be thoroughly covered, admit the brim of the Water reach unto C,



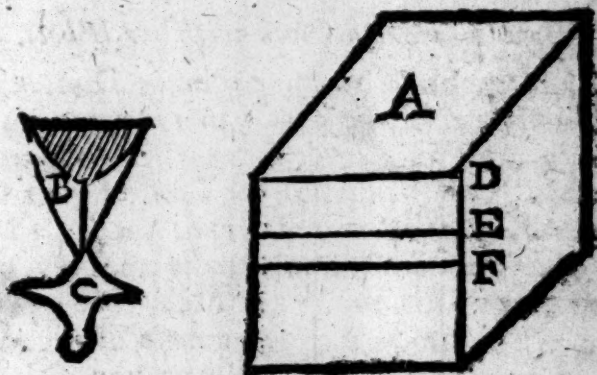
then taking out *that* irregular body again, admit the superficies of the Water fall to D; then measure the distance between C and D, which suppose is 9 inches, which multiplied in 400, the square of the Cube's side produceth 3600. and so many Cubical inches are contain'd in the irregular body B.

*How the weight of any part or portion of a solid body may be known without separation thereof from the other part of the body.*

Having a Cube prepared as before declared, first put the solid body therein, which done, fill the Cube top full of Water, then softly lift that body out of the Water, till such time as there remain no more in the Water than that proportion whose weight you desire to know, at that instant make a mark on one side of the Vessel, where the superficies of the Water then toucheth, then take out the body altogether; this done, measure the distance from the former mark to the superficies of the

the Water, as it is now after the body is taken quite out. Likewise measure the distance of the Water's superficies from the top of the Cube, which done, augment the weight of the whole body by the lesser distance, and divide by the greater, your Quotient will shew the true weight of the Fragment required.

*Example.* Admit B C to be in all 100 pound-weight, being either Brass, Iron, Silver, Lead, or other *Metal*, my *Desire* is to know the *weight* of the portion C: first therefore, putting the whole body into the Vessel A, fill it full of Water, then lifting it softly up, till all the body be out of the Water excepting C: I find the superficies of the



Water to be fallen to E; where I make a mark, then take out the whole body, admit the Water is fallen to F, and that by measuring I find E F to be 8 inches and D F 20 inches, 8 multiply'd in 100, (the whole Pillar's weight) yieldeth 800, which divided by 20 (the greater distance) bringeth in the Quotient 40, so many pound-weight I conclude the Portion C to weigh.

*To make two Images, one shall light a Candle, and the other blow it out.*

Upon the side of a Wall make the figure of two Images, in the Mouth of each put a Pipe or Quill, so artificially that it be not perceived, in one of which place Salt-petre very fine and dry and pulveriz'd, and at the end set a little match of Paper, in the other Quill Sulphur beaten small. Then, holding a lighted Candle in your Hand, say to one of those Images, by way of command, *Blow out the Candle*, then lighting the Paper with the Candle, the Salt-petre will blow out the Candle immediately, and going to the other Image (before the snuff of the Candle be out) touch the Sulphur with it, and say, *Light the Candle*, and it will immediately be lighted.

*How to make a Clock with one Wheel.*

Make the body of an ordinary Dial, and divide the Hour in the Circle in 12 parts, make a great Wheel, in height above the Axle-tree, to the which you shall place the Cord of your Counterpoise, so that it may descend, that in 12 hours time your Index or Needle make one revolution, which may be known by a Watch, then put a Balance which may stop the course of the Wheel, and give it a regular motion, and you shall see an effect as just from this as from a Clock with many Wheels.

*To take off the colouring of the Hands of Dyers, &c.*

Take the Juice of a Lemon, with a little Bay-salt, and wash your Hands with it, and let them dry of themselves; wash them again, and you shall find all the Spots and Stains gone: It is also good against the Scurf or Scabs.

*To*



*To prevent Fleas from Dogs.*

Take the green outward Shell of Walnuts and stamp them, and anoint the Dog with it where the Fleas vex him, and especially in the Ears, and the Fleas shall not touch him.

*To heal cleft or kiked Heels.*

Take *Dragaul* and *Galbanum*, as much of one as the other, and make thereof a Powder, then take new Wax, Oyl of Violets, and a little Goat-suet or Ox-tallow, and melt in on the Fire, then put in the said Powders, and make of all these an Ointment, wherewith anoint your Heels, and they will be suddenly whole.

*To make an old Writing appear fair.*

Take Galls, boil them in Wine, and wash the Writing therewith.

*To take the Impression of the Seal of a Letter.*

Melt a little Brimstone, casting in some white Lead, put this mixture on the Seal, strengthening it with a small piece of Paper, a little bigger than the Impression is; being cold, take it off, and you shall find the print of the Seal thereon.





## Some further Observations on COLOURS.

### Of Yellows.

**T**Here are two sorts of *yellow Oaker*, the one is call'd *plain Oaker*, the other *ipruce Oaker*; the *plain* is of a lighter Colour than the *spruce*; most of the *yellow Oaker* comes from *Shotover-Hills* near *Oxford*, which with pains will grind fine; it will resist the Weather well, and bears a good Body.

*Pink Yellow* is the Tincture of a Vegetable, which when dry'd becomes a good *light Yellow*, a little *greenish*, which will grind easily, and bears a good Body.

*Masticot* is an excellent *light Yellow* for most Uses, and especially to make *Greens*; several sorts may be formed of this Colour, if mixt with *Blues*. *Masticot* grinds fine, and bears a good Body.

*Orpiment*. Some do call it *yellow Arsnick*: It is good for some Uses, but troublesom to grind, of a poisonous Nature, be careful therefore that the Fumes of it (whilst grinding) do not offend your Brain.

### Of Reds.

Of all *light Reds*, *Vermillion* is the most delicate, because 'tis of itself a perfect Scarlet Colour; it is made of *Brimstone* and *Quicksilver*, and the Method is prescribed in *Lemery's Chymistry*. It will (with pains) grind as fine as Oil itself, but the Glory of it doth not truly appear unless it be ground

ground very fine, but will otherwise work coarse and look dull ; yet, if fine ground, it goes far, bears a good Body, has an excellent Colour and Beauty, and works smooth.

The richest sorts of *Lake* are the best of all *dark Reds*, because they are pure *Crimson*, and take great pains to grind, will bear a good Body, and lie smooth ; if not well and thoroughly ground, it falls short of its true Glory, and will be difficult to work, and apt to cling together like a Jelly, after its laid on, as warm Water on a greasy Trencher after washt with it ; to prevent which, temper it as thin as you can well work it, after it is well ground ; there are several sorts of it to be had which differ much ; of a dead and pale Colour some are, but the best comes from *Venice* and *Florence*.

*Spanish Brown* is a dull, dark *Red*, and of a Horseflesh Colour, being dug out of the Earth, some of it looks pleasant enough ; it is very much used by Painters, and is generally the first priming Colour which is laid on all Timber work, because it is plentiful and cheap ; if well ground it works well ; the best sort is of the deepest Colour, and most free from Stones, the other sorts look not so well, but may serve for a priming Colour, which seasons the Wood to lay other Colours upon.

*Red Lead*, which is the lightest of all *Reds* now used, is a harsh sandy Colour, and tho' you bestow great pains on it, yet it is not readily, or easily ground very fine ; the Method of making of it (which is out of *Litharge*) is to be seen in Mr. *Ray's* Appendix to his Catalogue of hard *English Words* : This Colour bears a good Body in Oil, binds well, and will dry soon.

## Of Blues.

*Blue Bice* is the palest in Colour, and bears the best Body of all *bright Blues* that are used in common Work; it must have good grinding on a very hard Stone, then it will work well, but inclines a little to be sandy, if not well ground: Its a *Blue* lies best near the Eye of any now used, except *Ultra Marine*, which is got out of the Tincture of *Lapis Lazuli*, as may be seen in a Book called *Modern Curiosities*: This is so very dear that it is not used, unless in Pieces of a great Price.

*Smalt* is a lovely *Blue* when it lies at a distance; it must only be strew'd upon a ground of *white Lead*, because it is so sandy that it bears no good body in *Oyl*, for *Oyl* changes the colour of it, making it look *Black*, unless *Whites* be mix'd therewith; and yet they take off its Beauty by making it faint, so that the best way is to strew it on. There are two sorts of this Colour, one is much finer than the other, but the coarsest gives the most glorious Colour, if look'd on at a distance; near the Eye the Beauty is not so great: The finest is called *Oil Smalt*, which is ground with *white Lead*, and may be laid in *Oil*, but it works with great difficulty, and bears not a good body.

*Indico* is a dark *Blue* when you work it by it self, to prevent which mix *Whites*, and so you make it a faint *Blue*; it will grind very fine, lies with a good body, and is very much in Use in vulgar Painting: the longer this Colour is ground, the fairer and more beautiful it will look.

*Blue Verditer* is somewhat sandy, of it self not a very good Colour being apt to turn *Greenish*, and is not of a good body; but if mixt with *Yellow* makes a good *Green*.

*Umber*



*Umber* is a Colour that really is neither *Black*, *White*, *Yellow*, *Red*, *Blue* nor *Green*, and yet much us'd in Painting: It is of a Complexion which we call a *Hair-colour*, it will grind very fine, bears a better body than any Earthy Colour now used, and, when burnt, is the most natural Shadow for *Gold* of all others; it resembles New *Oak Wainscot* the nearest of all Colours, if mixt with *White*: it will dry with a good Gloss, and that soonest too.

*Note*, If you would know what is meant, by saying, *It bears a good Body*, the Answer is, to bear a good Body, is to be of a Nature capable to be ground so fine, that mixing so well with the Oil, it seems only a very thick Oil of the same Colour, of which Nature are *Ceruse* and *White Lead*, *Vermillion*, *Pink*, *Lake*, *Ivory Black*, *Lamp-Black*, *yellow Oaker*, *Verdigrise*, *Amber*, *Indico* and *Spanish Brown*; as for *blue Bice* and *red Lead*, they are not so fine, yet they may be said to bear a very good Body when ground fine. All these Colours may be ground so fine as to be like Oil itself; and then they are said to work well, when they spread so smooth, and cover what you lay it upon so intirely, that you cannot see where the Pencil has gone, when the Colour is stiff enough workt; but *Verditors* and *Smalts* will never embody well with Oil, nor work well tho' ground never so much. *Red Lead* and *Bice* will hardly grind to an oily Fineness, nor lie entirely smooth in Work, yet because 'twill cover the Work, they are laid on very well, they may be said to bear an indifferent Body; and such Colours as readily part with the Oil when laid on the Work, are said not to bear a Body, or when there is a separation on the Work, the Colour in some parts, and the Oil in others, unless tempered extream thick.

Here

Here observe, If you have any Colour left in the Pots, the best way to preserve it is to cover it with Water, and it will prevent its drying in the hottest Weather.

As for your Pencils, as soon as you have done with them, wash them out in clean *Linseed Oil*, and afterwards in warm *Soap-suds*; for Colours or Oil once dry'd in your Brush or Pencils spoil them for ever.

Observe also, If you lay your Colours too thick and stiff on, the Colours will crack and shrink up together (after some time standing in the Weather) like *Pitch* laid on a thing in the Sun.

To conclude, When you use your smallest Brushes and Pencils, mix your Colours on a wooden Pal-  
lat, rather than in the Pot of Colours, and they will keep a better point to wor<sup>k</sup>. See more in Page 47.



F I N I S.